



Title

公表文献調査報告書
グリホサート

(Summary of the literature data for Glyphosate)

令和 4 年（2022 年）6 月 27 日
修正：令和 4 年（2022 年）9 月 29 日

バイエルクロップサイエンス株式会社

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概要及び序論

今般、「再評価における公表文献の提出について」（令和 3 年 10 月 1 日 3 消安第 3460 号局長通知）が発出され、日本でのグリホサートの再評価において、再評価用資料の提出期限開始日の 6 か月前から過去 15 年間に渡る、2006 年 7 月 1 日～2021 年 6 月 30 日までの期間における公表文献の調査が求められている。一方で EU では、グリホサート再登録(Annex I Renewal)において公表文献調査の報告が求められている。

グリホサートの公表文献調査は、EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”, and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*“, and the EFSA supporting publication from 2019 “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”に従って、Knoell Germany GmbH（ドイツ）及び欧州でグリホサートの登録を有する各社により 2006 年 7 月 1 日から 2021 年 8 月 31 日を対象として行われ、公表文献調査報告書（Literature Review Report、略称 LRR）が 6 報作成されている。

これら 6 報は、日本でのグリホサート再評価における公表文献調査の対象期間（2006 年 7 月 1 日～2021 年 6 月 30 日）を網羅しており、下表のとおりである。

公表文 献調査 報告書	報告書名及び報告書番号	作成日
1	Literature Review Report Scientific full text assessment of peer-reviewed open literature covering the publication period of 2006 to 2009 the active substance glyphosate (CAS RN® 1071-83-6)	2022 年 6 月 24 日
2	Literature Review Report Scientific peer reviewed open literature for the approval of pesticide active substances glyphosate and metabolites as under Article 8(5) of Regulation (EC) No 1107/2009 (Ref. EFSA Journal 2011; 9(2) 2092) Report Number: 108689-CA9-1	2020 年 5 月 19 日
3	Literature Review Report Scientific peer-reviewed open literature covering the publication period of January 2020 to June 2020 for the approval of pesticide active substance glyphosate and metabolites as under Article 8(5) of Regulation (EC) No 1107/2009 (Ref. EFSA Journal 2011; 9(2) 2092) Report Number: 113898-CA9-1	2020 年 10 月 20 日
4	Literature Review Report Scientific peer-reviewed open literature covering the publication period of	2021 年 1 月 5 日

	July 2020 to December 2020 for the approval of pesticide active substance glyphosate and metabolites as under Article 8(5) of Regulation (EC) No 1107/2009 (Ref. EFSA Journal 2011; 9(2) 2092) Report Number: 113898-CA9-2	
5	Literature Review Report Scientific peer-reviewed open literature covering the publication period of January 2021 to 14 May 2021 for the approval of pesticide active substance glyphosate and metabolites as under Article 8(5) of Regulation (EC) No 1107/2009 (Ref. EFSA Journal 2011; 9(2) 2092) Report Number: 113898-CA9-3	2022 年 4 月 28 日
6	Literature Review Report Scientific peer-reviewed open literature covering the publication period of 14 May 2021 to August 2021 for the approval of pesticide active substance glyphosate and metabolites as under Article 8(5) of Regulation (EC) No 1107/2009 (Ref. EFSA Journal 2011; 9(2) 2092) Report Number: 113898-CA9-4	2022 年 4 月 28 日

なお、LRR においては、検索キーワードに製剤名が含まれていないため、グリホサート単剤（我が国における農薬名「ラウンドアップ」及び「ラムロード」）をキーワードに含めた「Literature Review Report」の検索条件で、グリホサートの文献収集期間（2006 年 7 月 1 日～2021 年 6 月 30 日）にわたって追加調査（社内識別番号：SCIPI1809）を行った。

この報告書は、上記の 6 報告書（LRR）及び追加調査（SCIPI1809）を取りまとめたものである。

また、ヒトに対する毒性の文献については、他の分野の文献と区別なくその評価結果を本文献調査報告書に収載し報告した上で、別途、内閣府食品安全委員会「残留農薬の食品健康影響評価における公表文献の取扱いについて（令和 3 年 3 月 18 日 農薬第一専門調査会決定）」の別添様式例 1 及び 2 に従った一覧を作成した。

LRR における全検索期間（2006 年 7 月 1 日～2021 年 8 月 31 日）の調査の結果、重複を除いた公表文献は 17,486 文献であった。第 1 段階の評価（表題及び概要に基づく適合性評価）、第 2 段階の評価（全文に基づく評価）及び信頼性評価の結果は、表 1 及び表 2 に示されている。

第 2 段階に進んだ 2,103 文献のうち、適合性ありと判断された 970 文献は各報告書に記載された分類基準に従って適合性区分を行うとともに、「（ヒトに対する毒性（Toxicology）」、「農作物及び畜産物への残留（Residues）」、「生活環境動植物及び家畜に対する毒性

(Ecotoxicology)」、「環境動態 (E-fate)」の分類に分類された。また、信頼性評価も行われた。

第 2 段階で「適合性あり」となった文献のうち、日本語又は英語で作成された文献は、「区分 a (225 文献)」、「区分 b (641 文献)」及び「区分 c (43 文献)」の計 909 文献であった。

更に、「区分 a」に該当した日本語又は英語で作成された文献 (225 文献) について、「信頼性評価の判断基準」に基づいて「信頼性あり (制限なし) (reliable without restrictions) (分類 1)」、「申請性あり (制限あり) (reliable with restrictions) (分類 2)」、「信頼性なし(not reliable) (分類 3)」及び「評価不能 (分類 4)」に分類した。

また、追加調査 (SCIP11809) における全検索期間 (2006 年 7 月 1 日～2021 年 6 月 30 日) の調査の結果、LRR との重複を除いた公表文献は 155 文献であった。重複排除後の 155 文献は、いずれも第 1 段階の評価 (表題及び概要に基づく適合性評価) で適合性無しと判断された。

グリホサートについては、IARC、JMPR 及び米国 EPA による評価書の中で公表文献が引用されその一覧が記載されている。

これらの評価書で結果が引用されている第 2 段階で適合性評価が行われた文献については、後述する別添資料 1、別添資料 2-1～別添資料 2-4 (文献のリスト) において、引用された機関名を示した。

1. 検索に用いたデータベースに関する情報

各文献調査報告書（LRR）及び追加調査（SCIP1809）とも、オンラインサービスプロバイダーSTNにより、AGRICOLA、BIOSIS、CABA、CAPLUS、EMBASE、ESBIOBASE、FSTA、MEDLINE、SCISEARCH、TOXCENTER 及び PQSCITECH の計 11 種類のデータベースを共通して使用した。

各文献調査報告書からデータベースに関する基本情報を以下に転記する。

文献検索に用いたデータベース

データ ベース名	データベースの特徴、収載分野等	収載範囲、文献数	更新 頻度
1. AGRICOLA	農業、食品化学、栄養学等、農業及びその関連分野の情報が世界の主要な文献から収録されている。	1970年～現在 710 万文献以上（2020 年 9 月現在）	毎月
2. BIOSIS	生物学、生物医学関連の最大のデータベース 生物化学、免疫、病理、生理学、毒性学、薬学等	1926年～現在 2,780 万文献以上（2019 年 4 月現在）	毎週
3. CABA	農業関連 生物学、生物工学、林学、植物学、食品工学、栄養学、土壌、肥料学等	1973年～現在 990 万文献以上（2022 年 1 月現在）	毎週
4. CAPLUS	生化学、有機化学、高分子化学、応用科学、分析など化学及び周辺分野。	1907年～現在 570 万文献以上（2022 年 1 月現在）	毎週
5. EMBASE	生物医学及び薬学領域。医薬品に関連する文献を多く収録。	1947年～現在 3,430万文献以上（2022年1月現在）	毎日
6. ESBIOBASE	生物学研究に関する全分野	1994年～現在 900万文献以上（2021年1月現在）	毎週
7. FSTA	食品化学と食品工業分野の文献情報	1969年～現在 159万文献以上（2020年9月現在）	毎週
8. MEDLINE	医学に関連する全分野	1946年～現在 3,350 万文献以上（2022 年 1 月現在）	週 6 回
11. SCISEARCH	主要な科学、技術、医学雑誌等を収録する。	1974年～現在 4,770万文献（2019年8月現在）	毎週
9. TOXCENTER	薬物や化学物質の薬理学的、生化学的、生理学的、毒物学的作用に関する情報を収録。	1907年～現在 1,620 万文献以上（2019 年 8 月現在）	毎週
10. PQSCITECH	収録範囲は農業、医学、環境学、海洋学、薬剤学など非常に広く、エンジニアリングからライフサイエンスに及ぶ科学・技術分野。	1962年～現在 360 万文献以上（2021 年 1 月現在）	毎月

また、LRR の全検索期間(2006 年 7 月 1 日～2021 年 8 月 31 日)及び追加調査(SCIPI1809、2006 年 7 月 1 日～2021 年 6 月 30 日)での検索日は、次のとおりである。

対象化合物 (LRR)	検索対象期間	検索日
glyphosate, AMPA	2006 年 7 月 1 日～2006 年 9 月 30 日	2021 年 10 月 14 日
	2006 年 10 月 1 日～2009 年 12 月 31 日	2021 年 9 月 7 日
glyphosate, AMPA, N-acetyl-AMPA, N-acetyl-glyphosate	2010 年 1 月 1 日～2011 年 12 月 31 日	2019 年 10 月 28 日
	2012 年 1 月 1 日～2017 年 12 月 31 日	2018 年 6 月 8 日
	2018 年 1 月 1 日～2018 年 12 月 31 日	2019 年 7 月 4 日
	2019 年 1 月 1 日～2019 年 6 月 30 日	2019 年 7 月 10 日
	2019 年 7 月 1 日～2020 年 2 月 29 日	2020 年 1 月 7 日
HMPA	2010 年 1 月 1 日～2020 年 2 月 29 日	2020 年 2 月 24 日
N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA methylphosphonic acid	2010 年 1 月 1 日～2020 年 2 月 29 日	2020 年 2 月 27 日
N-methylglyphosate	2010 年 1 月 1 日～2020 年 4 月 30 日	2020 年 5 月 4 日
Glyphosate, AMPA, N-acetyl-AMPA, N-acetyl-glyphosate, HMPA, N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA, methylphosphonic acid, N-methylglyphosate	2020 年 1 月 1 日～2020 年 6 月 30 日	2020 年 7 月 2 日
	2020 年 7 月 1 日～2020 年 12 月 31 日	2021 年 1 月 5 日
	2021 年 1 月 1 日～2021 年 5 月 14 日	2021 年 5 月 14 日
	2021 年 5 月 14 日～2021 年 8 月 31 日	2021 年 9 月 8 日

対象製剤 (SCIPI1809)	検索対象期間	検索日
ROUNDUP, ROUND UP, RAMROD	2006 年 7 月 1 日～2021 年 6 月 30 日	2022 年 9 月 12 日

2. 検索に使用したキーワード及び検索の条件

キーワード及び検索の条件は、各報告書（LRR、6 報）及び追加調査（SCIP11809）に用いたキーワード及び（実際のサーチクエリーを含む）検索の条件がそれぞれ記載されている。

以下に対象とした農薬（有効成分）及び代謝物、製剤名、キーワード、検索の条件（サーチフィルター）の基本情報を抜粋する。

(1) 対象とする農薬（有効成分）及び代謝物

LRR において調査対象とした有効成分及び代謝物は以下のとおりである。

一般名	Glyphosate
IUPAC 名	<i>N</i> -(phosphonomethyl)glycine
CAS 番号	1071-83-6 Salts: 38641-94-0, 70901-12-1, 39600-42-5, 69200-57-3, 34494-04-7, 114370-14-8, 40465-66-5, 69254-40-6
代謝物一般名 1	AMPA
IUPAC 名	(aminomethyl)phosphonic acid
CAS 番号	1066-51-9
代謝物一般名 2	N-acetyl glyphosate
IUPAC 名	N-acetyl- <i>N</i> -(phosphonomethyl)glycine
CAS 番号	129660-96-4
代謝物一般名 3	N-acetyl AMPA
IUPAC 名	[(acetylamino)methyl]phosphonic acid
CAS 番号	57637-97-5
代謝物一般名 4	HMPA
IUPAC 名	(hydroxymethyl)phosphonic acid
CAS 番号	2617-47-2
代謝物一般名 5	N-methyl AMPA
IUPAC 名	[(methylamino)methyl]phosphonic acid
CAS 番号	35404-71-8

代謝物一般名 6	N-glyceryl AMPA
IUPAC 名	(2,3-dihydroxypropanoylamino)methylphosphonic acid
CAS 番号	該当無し
代謝物一般名 7	N-malonyl AMPA
IUPAC 名	3-oxo-3-(phosphonomethylamino)propanoic acid
CAS 番号	該当無し
代謝物一般名 8	methylphosphonic acid
IUPAC 名	methylphosphonic acid
CAS 番号	993-13-5
代謝物一般名 9	N-methylglyphosate
IUPAC 名	2-[methyl(phosphonomethyl)amino]acetic acid
CAS 番号	24569-83-3

追加調査（SCIP1809）において調査対象とした製剤名は、次のとおりである。

対象製剤（SCIP1809）
グリホサート製剤：ROUNDUP, ROUND UP, RAMROD

LRR 及び追加調査（SCIP1809）でのキーワードの設定は、次のとおり行われた。

LRR

Glyphosate and AMPA	glyphosat? OR glifosat? OR glyfosat? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR aminomethyl phosphonic OR aminomethylphosphonic OR 1066-51-9
N-acetyl glyphosate and N-acetyl AMPA	2 acetyl phosphonomethyl amino acetic acid OR n acetyl glyphosate OR n acetyl glyphosate OR n acetyl n phosphonomethyl glycine OR 129660-96-4 OR n acetyl ampa OR acetyl amino methyl phosphonic acid OR acetylaminomethyl phosphonic acid OR 57637-97-5
HMPA	2617-47-2 OR hydroxymethanephosphonic acid OR hydroxymethyl phosphonate OR hydroxymethylphosphonate OR hydroxymethyl phosphonic

	acid OR hydroxymethylphosphonic acid OR methanhydroxyphosphonic acid OR phosphonic acid(1w)hydroxymethyl OR phosphonmethanol
N-methyl AMPA	35404-71-8 OR methylamino methyl phosphonic acid OR methylaminomethyl phosphonic acid OR methylaminomethylphosphonic acid OR n methyl ampa OR nsc 244826 OR phosphonic acid methylamino methyl OR phosphonic acid p methylamino methyl
N-glyceryl AMPA	2 3 dihydroxy 1 oxopropyl aminomethyl phosphonic acid OR 2 3 dihydroxy 1 oxopropyl aminomethylphosphonic acid OR n glyceryl ampa
N-malonyl AMPA	3 oxo 3 phosphonomethyl amino propanoic acid or 3 oxo 3 phosphonomethyl aminopropanoic acid or n malonyl ampa
methylphosphonic acid	993-13-5 OR dihydrogen methylphosphonate OR methanephosphonic acid OR methyl phosphonic acid OR methylphosphonic acid OR nsc 119358 OR phosphonic acid methyl OR phosphonic acid p methyl
N-methylglyphosate	24569-83-3 OR 2 methyl phosphonomethyl amino acetic acid OR 2 methyl phosphonomethyl aminoacetic acid OR acetic acid 2 n methyl n phosphonomethyl amino OR glycine n methyl n phosphonomethyl OR glyphosate n methyl OR methyl glyphosate OR methyl phosphonomethyl amino acetic acid OR methyl phosphonomethyl aminoacetic acid OR n methyl n phosphonomethyl glycine OR n methylglyphosate OR n phosphonomethyl n methyl glycine OR n phosphonomethyl n methylglycine

(1w) = proximity operator (this order, up to 1 word between)
AND / OR / NOT = boolean search operators
? = any character(s)

追加調査 (SCIP11809)

ROUNDUP, ROUND UP, RAMROD	((ROUNDUP OR ROUND UP OR RAMROD) AND HERBICID?) NOT (GLYPHOSAT? OR GLIFOSAT? OR GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC OR 1066-51-9) AND ED<=20210630 AND PY<=2021 AND ED>=20060701 AND PY>=2006 NOT P/DT AND any term listed in app. B

AND / OR / NOT = boolean search operators
? = any character(s)

(2) 検索の条件（サーチフィルター）

LRR 及び追加調査（SCIP11809）で用いられたサーチフィルターを以下に示す。

ヒトに対する毒性（Toxicology） [キーワード、複数キーワードの場合はキーワード OR キーワード] AND [下欄のサーチフィルター] tox? OR hazard? OR adverse OR health OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR in vivo OR in vitro OR invivo OR invitro OR mode of action OR skin? OR eye? OR irrit? OR sensi? OR allerg? OR rat OR rats OR dog? OR rabbit? OR guinea pig? OR mouse OR mice OR metabolism OR metabolite? OR metabolic OR distribution OR adsorption OR excretion OR elimination OR kinetic OR cytochrome OR enzym? OR gen? OR muta? OR chromos? OR clastogen? OR DNA OR carcino? OR cancer? OR tumor? OR tumour? OR oncog? OR oncol? OR malign? OR immun? OR neur? OR endocrin? OR hormon? OR gonad? OR disrupt? OR reproduct? OR development? OR malform? OR anomal? OR fertil? OR foet? OR fet? OR matern? OR pregnan? OR embryo? OR epidem? OR medical? OR poison? OR exposure OR operator? OR bystander? OR resident? OR worker? OR occupat? biomonitoring OR human exposure OR microbiome OR oxidative stress OR apoptosis OR necrosis OR cytotoxicity OR Polyoxyethyleneamine OR POEA OR surfactant OR risk assessment?
農作物及び畜産物への残留（Residues） [キーワード、複数キーワードの場合はキーワード OR キーワード] AND [下欄のサーチフィルター] uptake OR translocation OR rumen OR storage stability OR storage OR stability OR metabolic OR metabolism OR breakdown OR nature of residues OR residue? OR magnitude of residues OR process? OR effects of processing OR dessicant OR preharvest OR preemerg? OR ?resistant? OR ?toleran? OR transgenic OR hydroly? OR rotation? OR succeed? OR plant? OR crop? OR feed? OR animal? OR livestock? OR hen OR cattle OR ruminant? OR goat? OR cow? OR pig? OR dietary OR assessment OR risk assessment OR consum? OR exposure
生活環境動植物及び家畜に対する毒性（Ecotoxicology） [キーワード、複数キーワードの場合はキーワード OR キーワード] AND [下欄のサーチフィルター] tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR plant AND submerge? OR emerge? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator OR solitary OR alg? OR aquatic OR freshwater OR vertebrat? OR mammal? OR rat OR mouse OR mice OR rabbit OR hare OR protection OR model? OR vole OR pest OR arthropod? OR beneficials OR typhlodromus OR aphidius OR parasitoid OR predator OR chrysoperla OR Orius OR spider OR worm? OR ?worm OR Eisenia OR soil OR collembol? OR macro organism OR folsomia OR springtail OR decompos? OR micro organisms OR microorganisms OR microbial OR carbon OR nitrogen OR plant? OR vegetative vigo? OR seedling OR germination

OR monocot? OR dicot? OR sewage OR activated sludge OR biodegrad? OR bioaccumulation? OR amphib? OR reptile? OR aquatic plant OR beneficial
環境動態 (Environmental fate)
[キーワード、複数キーワードの場合はキーワード OR キーワード] AND [下欄のサーチフィルター]
soil OR water OR sediment OR degradat? OR photo? OR soil residues OR soil accumulat? OR soil contaminat? OR mobility OR sorption OR column leaching OR aged residue OR leach? OR lysimeter OR groundwater OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR transport OR micronutrient OR phosphate OR iron OR manganese OR half-life OR halflife OR half-lives OR halflives OR DT50 OR kinetics OR off-site movement OR removal OR drinking water OR water treatment processes OR atmospheric deposition OR tile-drains OR surface water OR monitoring data OR disinfectant OR ozone OR tillage OR infiltration OR hard surface OR rainwater OR rain water OR chelat? OR complex? OR mineralization OR persistence OR ligand

3. 評価目的との適合性評価（第 1 段階、第 2 段階）及び信頼性評価で設定した判断基準

重複を除いた全文献を、各報告書に記載された第 1 段階での適合性基準に従って作成言語を問わずに評価した。

第 2 段階では、第 1 段階で「評価の目的に適合性のある文献」とされたものを対象とし、文献全文の内容に基づいて各報告書に記載された第 2 段階での適合性基準に従って次の区分に分類し、また、「(ヒトに対する毒性 (Toxicology))」、「農作物及び畜産物への残留 (Residues)」、「生活環境動植物及び家畜に対する毒性 (Ecotoxicology)」、「環境動態 (E-fate)」、「その他 (Efficacy, Analytical methods 等の Other non-relevant categories)」に分類した。

区分 a リスク評価パラメーターを確立または改善するためのデータを提供する研究。これらの研究は、OECD ガイダンス文書 (OECD、2005; 2006) の後続のステップに従って詳細に要約する必要があり、信頼性を考慮する必要がある。(Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment)

区分 b データ要件に関連しているが、申請者の意見では、既存のリスク評価パラメーターを変更しない補足情報のみを提供する研究。そのような決定の妥当性を提供する必要がある。(Category B, Relevant but supplementary articles after detailed assessment)

区分 c 適合性を明確に判断できない研究。(Category C, articles of unclear relevance after detailed assessment)

評価目的に適合しない文献は、「Non-relevant by full text (全文による検討で適合性なし)」とした。

なお、「公表文献の収集、選択等のためのガイドライン」において日本語又は英語で作成された一次資料(原著)が対象であるため、後述する「区分 a、b 及び c の文献」のリスト(別添資料 2-1~2-4)は、日本語及び英語で作成されたものを対象とした。

評価目的への適合性評価において「区分 a」に分類した文献について、各報告書に記載されている信頼性基準に基づいて信頼性を評価した。

分類は、「信頼性あり(制限なし)(reliable without restrictions)(分類 1)」、「信頼性あり(制限あり)(reliable with restrictions)(分類 2)」及び「信頼性なし(not reliable)(分類 3)」であり、「信頼性なし(not reliable)(分類 3)」と分類された文献は「区分 b」へと変更した。また、分類 1~3 に該当しないものは、「評価不能(分類 4)」とした。

図 1 に、公表文献調査に関する模式図を示す。

4. 検索結果

- (1) 評価目的との適合性評価（第1段階、第2段階）及び第2段階で「適合性あり」とされた文献と分類結果

LRRにおける結果を表1及び表2に示す。

表1：LRR：評価目的との適合性評価（第1段階、第2段階）の結果のまとめ

分野	該当する 文献数 (重複を除く)	第1段階		第2段階	
		適合性なし	それ以外 (第2段階へ)	適合性なし	適合性あり (区分 a+b+c)
合計	17,486	15,383	2,103	1,133 *	970 [909]

*: 薬効(Efficacy)に該当する2文献（M-805372-01-1及びM-803659-01-1）を含む。

[]: 英語又は日本語で作成された文献数。

表2：LRR：適合性評価の第2段階及び信頼性評価で適合性ありとされた文献(英語又は日本語で作成)と分類結果

分野	該当する文献数			
	区分 a	区分 b	区分 c	計
ヒトに対する毒性 (Toxicology)	79	342	24	445
農作物及び畜産物への残留 (Residues)	12	41	10	63
生活環境動植物及び家畜に 対する毒性(Ecotoxicology)	33	170	9	212
環境動態 (E-fate)	101	88	0	189
合計	225	641	43	909

追加調査（SCIPI1809）における結果を表3に示す。

表3：追加調査（SCIPI1809）：評価目的との適合性評価（第1段階）の結果のまとめ

分野	該当する 文献数 (重複を除く)	第1段階	
		適合性なし	それ以外 (第2段階へ)
合計	155	155	0

- (2) 適合性評価の第2段階で「適合しない」と判断した文献

別添資料1として、適合性評価の第2段階で「適合しない」と判断した文献のリストを、その判断理由とともに示す。

別添資料 1：第 2 段階で評価の目的と適合しないと見なされた文献リスト

(3)適合性評価の第 2 段階で「区分 a」、「区分 b」、「区分 c」と判断した文献

適合性評価の第 2 段階及び信頼性評価の結果、「区分 a」、「区分 b」、「区分 c」と判断した文献のリストを、別添資料 2-1、2-2、2-3 及び 2-4 として理由とともに示す。

別添資料 2-1：適合性評価の第 2 段階及び信頼性評価の結果、「区分 a」「区分 b」「区分 c」へ分類された文献リスト(ヒトに対する毒性、Toxicology)

別添資料 2-2：適合性評価の第 2 段階及び信頼性評価の結果、「区分 a」「区分 b」「区分 c」へ分類された文献リスト(農作物及び畜産物への残留、Residues)

別添資料 2-3：適合性評価の第 2 段階及び信頼性評価の結果、「区分 a」「区分 b」「区分 c」へ分類された文献リスト(生活環境動植物及び家畜に対する毒性、Ecotoxicology)

別添資料 2-4：適合性評価の第 2 段階及び信頼性評価の結果、「区分 a」「区分 b」「区分 c」へ分類された文献リスト(環境動態、E-fate)

また、文献のコピーを別添資料 5 に示す。

なお、次の 4 文献は website のみで閲覧可能であること、また著作権の問題から、コピー(pdf ファイル)を入手することが不可能であった。

不 可 能 であ った 理由	Title	Author	Source	別 添 資 料/区分
著 作 権 上、不 可 能	The potential impact of Glyphosate on captured fisheries productivity and sustainability	Agbon, AOI; Tope-Ajayi, OO; Abdul, WO; Akinyemi, AA; Odulate, DO; Adeosun, FI	Proceedings of the 29th annual conference of the Fisheries Society of Nigeria (FISON). pp. 17-19. 2014. Editor(s): Solomon, SG Published by: FISON, Lagos (Nigeria) Conference: 29th annual conference of the Fisheries Society of Nigeria (FISON), Makurdi (Ni	別 添 資 料 2-3/ 区分 b
著 作 権 上、不 可 能	Effect of glyphosate on Bacillus megaterium with reference to tea ecosystem.	Emmanuel, L. D. A.; Maiyappan Sengodan; Arulmariamathan, J. P.; Sengodan, M.	International Journal of Tea Science (IJTS) (2015), Volume 11, Number 3/4, pp. 16-22, 35 refs. ISSN: 0972-544X Published by: International Society of Tea Science, New Delhi URL (Availability): http://www.teascience.org/journals.htm	別 添 資 料 2-3/ 区分 b
Website のみ 閲 覧可能	Toxicity response of Chlorella microalgae to glyphosate herbicide exposure based on biomass, pigment contents and photosynthetic efficiency.	Kaeboon, Somruthai; Suksungworn, Rungcham; Sanevas, Nuttha [Reprint Author]	Plant Science Today, (2021) Vol. 8, No. 2, pp. 293-300. http://horizonepublishing.com/journals/index.php/PST/index . ISSN: 2348-1900. E-ISSN: 2348-1900.	別 添 資 料 2-3/ 区分 a
Website のみ 閲 覧可能	Carbon mineralisation in orange grove soils treated with different doses of glyphosate-	Saglikler, H. A.	Journal of Environmental Protection and Ecology (2018), Volume 19, Number 3, pp. 1102-1110, 25 refs. ISSN: 1311-5065 Published by:	別 添 資 料 2-4/ 区分 b

	amine salt		Balkan Environmental Association (BENA), Thessaloniki URL (Availability): https://docs.google.com/a/jepe-journal.info/viewe	

(4) 「区分 a」 についての信頼性の評価結果

「区分 a」と評価した文献は評価目的との適合性がより高いことから、別添資料 2-1～2-4 のリストに掲載した上で、反論も含めた適合性及び信頼性判断理由の詳細を、別添資料 3 として取りまとめた。

別添資料 3 : 「区分 a」 の文献に関する適合性及び信頼性判断理由

(5) 海外の評価において評価書に結果が引用された文献

グリホサートについては、IARC（2015 年）、JMPR（2016 年）及び EPA（2021 年）から評価書が公表され、文献が評価されている。

IARC: Some Organophosphate Insecticides and Herbicides
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans
Volume 112

JMPR (2016): Pesticide residues in food – 2016, Toxicological evaluations

EPA (2021): Final National Level Listed Species Biological Evaluation for Glyphosate

EFSA (European Food Safety Authority), 2015. Conclusion on the peer review of the pesticide risk assessment of the active substance glyphosate. EFSA Journal 2015;13(11):4302, 107 pp. doi:10.2903/j.efsa.2015.4302

EFSA (European Food Safety Authority), 2017. Conclusion on the peer review of the pesticide risk assessment of the potential endocrine disrupting properties of glyphosate. EFSA Journal 2017;15(9):4979, 20 pp. <https://doi.org/10.2903/j.efsa.2017.4979>

EFSA (European Food Safety Authority), 2018. Scientific Report on evaluation of the impact of glyphosate and its residues in feed on animal health. EFSA Journal 2018;16(5): 5283, 22 pp. <https://doi.org/10.2903/j.efsa.2018.5283>

Registration Review: Draft Human Health and/or Ecological Risk Assessments for

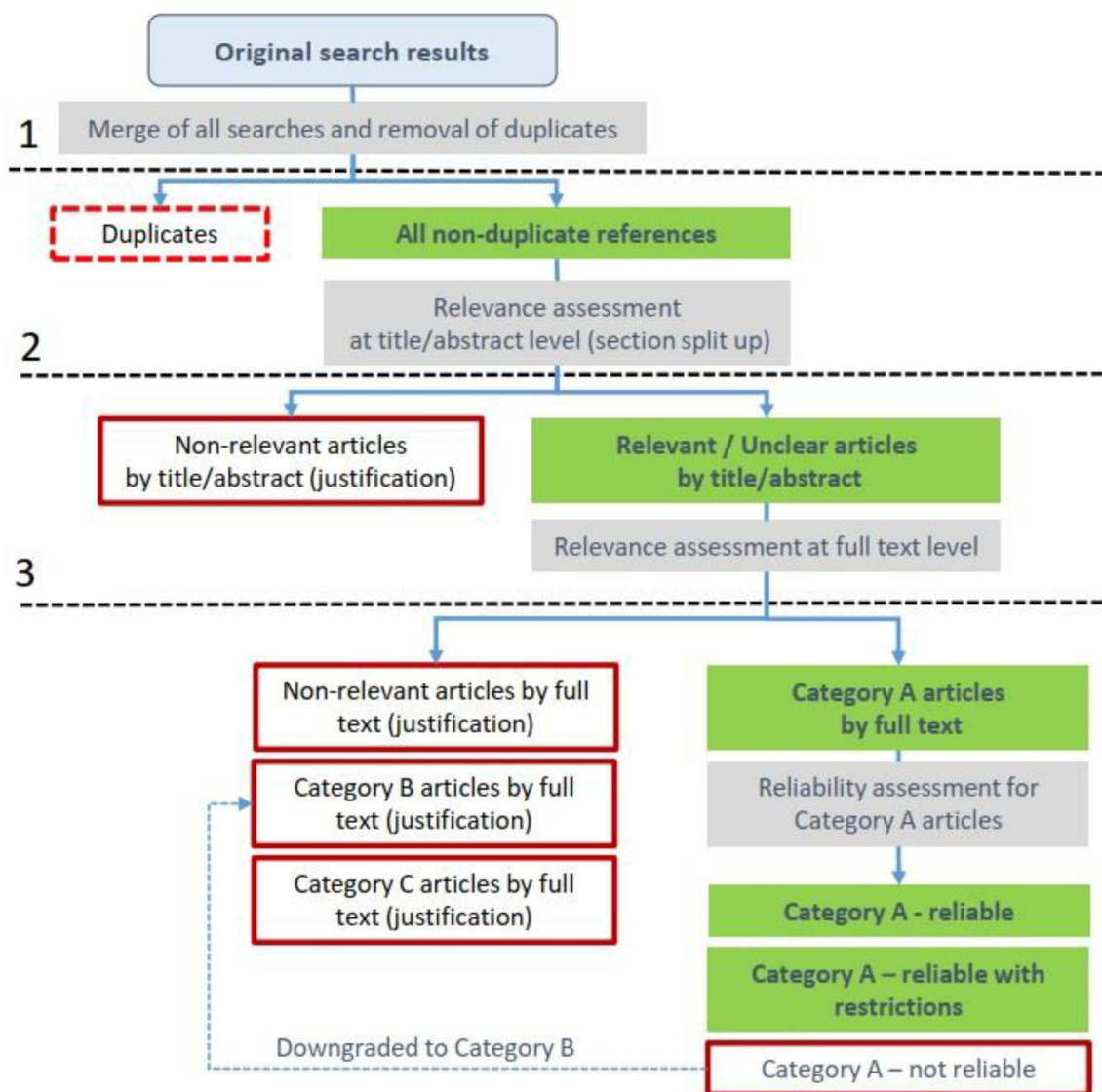
Several Pesticides, Posted by the Environmental Protection Agency on Feb 27, 2018

6/17/09 - Glyphosate Registration Review Document (PWP), Posted by the Environmental Protection Agency on Jul 22, 2009

前段に記載した条件下で網羅的検索を行った文献が上記の海外評価書に引用されているかを確認し、引用されている文献について、網羅的検索で該当しない文献は、リスト（報告書の別添 1：適合性なしのリスト、別添 2：適合性ありのリスト）に収載せず、該当した文献で上述のいずれかの評価書で引用されたものは、公表文献調査報告書に記した適合性評価の手順に従って分類した。

第 2 段階で適合性評価が行われた文献は、別添資料 1 及び別添資料 2-1～2-4 において引用された機関名を示した。なお、第 1 段階で適合性評価を行った結果、「適合性なし」と判断された文献は第 2 段階の評価から除外した。

図 1：公表文献調査に関する模式図



Literature Review Report

**Scientific full text assessment of peer-reviewed open literature
covering the publication period of 2006 to 2009 the active
substance glyphosate (CAS RN® 1071-83-6)**

**as under Article 8(5) of Regulation (EC) No 1107/2009
(Ref. EFSA Journal 2011; 9(2) 2092)**

Report number

118901/01

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Reporting Date

24-June 2022

Date of search(es):

01-07-2006 – 31.12.2009

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1 Summary

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”², and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

This Literature Review Report summarizes the the full text assessment glyphosate public literature, covering the publication period 1st July 2006 to 31st December 2009.

The literature search was conducted accessing 11 bibliographic databases via the service provider STN.

3294 articles in total were identified upon removal of duplicates within the current search (1st July 2006 to 31st December 2009).

All 3294 articles were subsequently assessed for their relevance at title/abstract level (“rapid assessment” according to the procedure and requirements stated in the EFSA 2092 Guidance Document).

A total of 3050 of the 3294 articles were identified as “non-relevant” in the rapid assessment (e.g. publications dealing with chemical synthesis, efficacy, analytical methods or publications which are not related to glyphosate or its metabolites) and excluded from further evaluation.

For the remaining 244 articles, identified as potentially “relevant” or of “unclear relevance” in the rapid assessment, the full-text documents⁵ were reviewed in detail (“detailed assessment”).

A total of 166 articles of the remaining 244 articles were identified as “non-relevant” in the detailed assessment and were excluded from further evaluation. The list of the articles and the justification for their non-relevance is provided in **Table 29** of this Literature Review Report document.

The remaining 78 articles identified as “relevant” in the detailed assessment were classified according to the EFSA 2092 Guidance Document (EFSA Journal 2011;9(2):2092, Point 5.4.1).

Category A Articles which provide data for establishing or refining risk assessment parameters. For all articles of Category A, a reliability assessment was performed as recommended in the EFSA 2092 Guidance Document (GD). Summaries were compiled for Category A articles classified as “reliable” or “reliable with restrictions”. The list of these Category A & reliable / reliable with restrictions articles can be found in **Table 23** and **Table 24** of this Literature Review Report document.

¹ (aminomethyl)phosphonic acid (AMPA).

² European Food Safety Authority, 2011: *Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) No 1107/2009*. EFSA Journal 2011;9(2):2092. 49 pp, doi:10.2903/j.efsa.2011.2092.

³ Appendix to EFSA Journal 2011;9(2):2092. *Further guidance on performing and presenting the literature search*. Available online: <https://efsa.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.2903/j.efsa.2011.2092&file=efs22092-sup-0001-Appendix.pdf>

⁴ European Food Safety Authority, 2019. *Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*. EFSA supporting publication 2019:EN-1612. 49 pp., doi:10.2903/sp.efsa.2019.EN-1612.

⁵ All articles used within the glyphosate dossier have been purchased via Copyright Clearance Centre. In some cases, please note that the Copyright Clearance is not overtly visible, and in some instances is part of the article documents. Should the Copyright Clearance proof be required, this can be provided upon request.

Category B Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment. A justification for such decision is provided as recommended in the EFSA 2092 Guidance Document (GD). The list of these Category B articles and the justifications can be found in **Table 25** and **Table 26** of this Literature Review Report document.

Category C Articles for which relevance cannot be clearly determined. As recommended in the EFSA 2092 Guidance Document (GD), an explanation is provided why the relevance could not be determined. The list of these Category C articles and the explanations can be found in **Table 27** and **Table 28** of this Literature Review Report document.

The full outcome of the literature evaluation is provided in **Table 1**.

Table 1: Summary of the literature review

Section	Number of articles found	Rapid assessment (title/abstract level)		Detailed assessment (full-text level)	
		non-relevant articles	potentially relevant / unclear relevance	non-relevant articles	relevant articles (Category A+B+C)
Ecotoxicology	123	24	99	69	30
E-fate	83	18	65	49	16
Residues	13	12	1	0	1
Toxicology	106	30	76	45	31
Efficacy ^{a)}	2	0	2	2	0
Other non-relevant categories ^{b)}	2967	2966	1	1	0
Total	3294	3048	244	166	78

^{a)} Efficacy / Agronomy (e.g. reporting desired effects on organisms to be controlled) and development of analytical methods (artificial measurements) do not provide information useful/required for the environmental or human safety risk assessment.

^{b)} The category "other non-relevant categories" covers a wide range of scientific publications which are not related to glyphosate or its metabolites or are not related to exposure of humans or the environment to glyphosate or its metabolites and thus not relevant for the risk assessments.

The full outcome of the relevant articles after detailed (full-text) assessment is provided in **Table 2**.

Table 2: Relevant articles by full-text classified according to the EFSA 2092 GD, Point 5.4.1

Section	Relevant articles by full-text (EFSA 2092 GD, Point 5.4.1)		
	Category A ^{a)}	Category B ^{b)}	Category C ^{c)}
Ecotoxicology	7	22	1
E-fate	0	16	0
Residues	0	1	0
Toxicology	6	19	6
Efficacy	0	0	0
Total	13	58	7

^{a)} Category A: Articles, which provide data for establishing or refining risk assessment parameters.

^{b)} Category B: Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment.

^{c)} Category C: Articles for which relevance cannot be clearly determined.

All articles (and their translations) evaluated at full text level (detailed assessment) were submitted to the AGG in a Portable Document Format (PDF).

2 Introduction

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”², and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA Supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

This present Literature Review Report summarizes search and evaluation of glyphosate public literature, covering the publication period of 1st July 2006 to 31st December 2009.

The search has been conducted via the online service provider STN (www.stn-international.de) that provides access to a broad range of databases and to published research, journal literature, patents, structures, sequences, properties, and other data.

To offer a comprehensive literature search covering the requirements of the EFSA 2092 Guidance Document eleven databases have been used: AGRICOLA, BIOSIS, CABA, CAPLUS, EMBASE, ESBIODBASE, MEDLINE, TOXCENTER, FSTA, PQSCITECH, and SCISEARCH.

Please refer to **Table 3** for more details on the literature search.

Table 3: Overview of the search conducted for glyphosate and its metabolites

Performed for	Covering publication period	Conducted on
Glyphosate AMPA	October 2006 – December 2009	07 September 2021
Glyphosate AMPA	July 2006 – September 2006	14 October 2021

AMPA = (aminomethyl)phosphonic acid

A “focused search for grouped data requirements”⁶ have been performed (a combination of a substance basic input parameters, keywords and “search filters” defined for the four technical sections –toxicology, residues, environmental fate, and ecotoxicology).

Please refer to **Chapter 2.2** and **2.3** (pages 14 and 155) for the input parameters, keywords and search filters used in the literature search.

Regarding details on the bibliographic databases used in the literature search, please refer to **Chapter 2.1 (Table 4)**.

Regarding the number of articles retrieved in the literature search, please refer to **Chapter 2.1 (Table 5)**.

For the relevance and reliability assessment, please refer to **Chapter 2.4** and **2.5** (pages 17 and 20).

⁶ Citation from the EFSA 2092 Guidance Document: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

For the full outcome of the literature search for the individual technical sections, please refer to **Chapter 3** (page 25).

2.1 Bibliographic databases used in the literature search

Table 4: Overview of the databases used in the literature search

Data requirement(s) captured in the search	Details of the search(es)			
	1. AGRICOLA	2. BIOSIS	3. CABA	4. CAPLUS
Justification for choosing the source:	Provides literature from agriculture and related fields, e.g. biology, biotechnology, botany, ecology etc.	Provides the most comprehensive and largest life science literature, e.g. biosciences, biomedicine etc.	Covers literature from agriculture, food science, biotechnology, crop protection, crop sciences, environment, soils and fertilizers, etc.	Covers literature and patents from Analytical chemistry, Applied chemistry, Biochemistry, Chemical engineering, Macromolecular chemistry, Organic chemistry
Number of records in the database at the time of search:	> 6.7 million (09/2019)	> 27.8 million (04/2019)	> 9.9 million	> 6.7 million (09/2019)
Database update:	Monthly	Weekly	Weekly	Daily updates bibliographic data; weekly updates indexing data
Date of the search:	07-September-2021 14 October 2021	07-September-2021 14 October 2021	07-September-2021 14 October 2021	07-September-2021 14 October 2021
Database covers records:	1970-present	1926-present	1973-present	1907-present and more than 180,000 pre-1907
Date of the latest database update:	04-August-2021 11 October 2021	01-September-2021 13 October 2021	01-September-2021 13 October 2021	06-September-2021 13 October 2021
Language limit:	No	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	906 (07-09-2021) 0 (14-10-2021)	977 (07-09-2021) 51 (14-10-2021)	1908 (07-09-2021) 0 (14-10-2021)	1261 (07-09-2021) 52 (14-10-2021)

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)		
	5. EMBASE	6. Esbiobase	7. Medline
Justification for choosing the source:	Covers literature from biological science, biochemistry, drugs, environmental science, pharmacy, etc.	Covers literature from microbiology, biotechnology, ecological and environmental sciences, plant science, toxicology, etc.	Covers literature from all areas of biomedicine.
Number of records in the database at the time of search:	>36.4 million (08/2019)	>9 million Static file	>33.5 million (01/2022)
Database update:	weekly	weekly	daily
Date of the search:	07-September-2021 14 October 2021	07-September-2021 14 October 2021	07-September-2021 14 October 2021
Database covers records:	1947-present	1994-2021	1946-present
Date of the latest database update:	06-September-2021 13 October 2021	01-September-2021 13 October 2021	06-September-2021 13 October 2021
Language limit:	no	no	no
Document types <u>excluded</u> that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .		
Total number of records retrieved:	246 (07-09-2021) 22 (14-10-2021)	819 (07-09-2021) 0 (14-10-2021)	358 (07-09-2021) 17 (14-10-2021)

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)			
	8. PQSciTech	9. SciSearch	10. ToxCenter	11. FSTA
Justification for choosing the source:	Covers literature from a wide area of life sciences and engineering	Covers literature from agriculture, biology, biotechnology chemistry, ecology, genetics, plant sciences, etc	Covers literature about adverse drug reactions, chemically induced diseases, environmental pollution, pesticides and herbicides, toxicological analysis, etc.	Covers literature about biotechnology, food sciences, plant pathology etc.
Number of records in the database at the time of search:	>33.6 million (01/2021)	>47.7 million (08/2019)	>16.2 million (01/2022)	>1.59 million (09/2020)
Database update:	monthly	weekly	daily	monthly
Date of the search:	07-September-2021 14 October 2021	07-September-2021 14 October 2021	07-September-2021 14 October 2021	07-September-2021 14 October 2021
Database covers records:	1962-present	1974-present	1907-present	1969-present
Date of the latest database update:	24 August-2021 24 September 2021	06-September-2021 11 October 2021	06-September-2021 11 October 2021	06-September-2021 11 October 2021
Language limit:	no	no	no	no
Document types <u>excluded</u> that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	1168 (07-09-2021) 0 (14-10-2021)	1211 (07-09-2021) 61 (14-10-2021)	822 (07-09-2021) 29 (14-10-2021)	38 (07-09-2021) 1 (14-10-2021)

Table 5: Total number of articles retrieved

Scope of the search	Total number of hits over all databases within the current search	After applying search filters ^{a)} within the current search	After manual removal of duplicates ^{b)} within the current search
October 2006 – December 2009 Glyphosate AMPA	9714	9458	3253
July 2006 – September 2006 Glyphosate AMPA	233	230	41

^{a)} Search filters applied for the four technical sections (residues, environmental fate, toxicology and ecotoxicology). Please refer to **Chapter 2.3** for more details (page 15).

^{b)} Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

2.2 Input parameters used in the literature search

The basic input parameters used in the literature search, e.g. IUPAC, chemical name or CAS number, are provided in **Table 6 - Table 7**.

Table 6: Input parameters – active substance Glyphosate

Substance name	Glyphosate Salts: isopropylamine, potassium, ammonium, methylmethanamine
IUPAC / CA name	2-(phosphonomethylamino)acetic acid
CAS number(s)	1071-83-6 Salts: 38641-94-0, 70901-12-1, 39600-42-5, 69200-57-3, 34494-04-7, 114370-14-8, 40465-66-5, 69254-40-6

Table 7: Input parameters – metabolite AMPA

Substance name	AMPA
IUPAC / CA name	(aminomethyl)phosphonic acid
CAS number(s)	1066-51-9

2.3 Keywords and search filters used in the literature search

The approach used for the search was the “focused search for grouped data requirements”⁷, which combines the active substance and metabolite basic input parameters, keywords and search filters defined for each technical section. Please refer to **Table 8** for more details on the keywords used and to **Table 9 - Table 12** for the search filters.

Table 8: Keywords used for the active substance glyphosate.

Gly: Glyphosate and AMPA	glyphosat? OR glifosat? OR glyfosat? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR aminomethyl phosphonic OR aminomethylphosphonic OR 1066-51-9

(1w) = proximity operator (this order, up to 1 word between)

AND / OR / NOT = boolean search operators

? = any character(s)

Table 9: Search filters related to the technical section toxicology

Toxicology [Gly] AND the following search filters
tox? OR hazard? OR adverse OR health OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR in vivo OR in vitro OR invivo OR invitro OR mode of action OR skin? OR eye? OR irrit? OR sensi? OR allerg? OR rat OR rats OR dog? OR rabbit? OR guinea pig? OR mouse OR mice OR metabolism OR metabolite? OR metabolic OR distribution OR adsorption OR excretion OR elimination OR kinetic OR cytochrome OR enzym? OR gen? OR muta? OR chromos? OR clastogen? OR DNA OR carcino? OR cancer? OR tumor? OR tumour? OR oncog? OR oncol? OR malign? OR immun? OR neur? OR endocrin? OR hormon? OR gonad? OR disrupt? OR reproduct? OR development? OR malform? OR anomal? OR fertil? OR foet? OR fet? OR matern? OR pregnan? OR embryo? OR epidem? OR medical? OR poison? OR exposure OR operator? OR bystander? OR resident? OR worker? OR occupat? biomonitoring OR human exposure OR microbiome OR oxidative stress OR apoptosis OR necrosis OR cytotoxicity OR Polyoxyethyleneamine OR POEA OR surfactant OR risk assessment?

Table 108: Search filters related to the technical section residues

Residues [Gly] AND the following search filters
uptake OR translocation OR rumen OR storage stability OR storage OR stability OR metabolic OR metabolism OR breakdown OR nature of residues OR residue? OR magnitude of residues OR process? OR effects of processing OR dessicant OR preharvest OR preemerg? OR ?resistant? OR ?toleran? OR transgenic OR hydroly? OR rotation? OR succeed? OR plant? OR crop? OR feed? OR animal? OR livestock? OR hen OR cattle OR ruminant? OR goat? OR cow? OR pig? OR dietary OR assessment OR risk assessment OR consum? OR exposure

⁷ Citation from the EFSA 2092 GD: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

Table 11: Search filters related to the technical section environmental fate

Environmental fate [Gly] AND the following search filters
soil OR water OR sediment OR degradat? OR photo? OR soil residues OR soil accumulat? OR soil contaminat? OR mobility OR sorption OR column leaching OR aged residue OR leach? OR lysimeter OR groundwater OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR transport OR micronutrient OR phosphate OR iron OR manganese OR half-life OR half-life OR half-lives OR half-lives OR DT50 OR kinetics OR off-site movement OR removal OR drinking water OR water treatment processes OR atmospheric deposition OR tile-drains OR surface water OR monitoring data OR disinfectant OR ozone OR tillage OR infiltration OR hard surface OR rainwater OR rain water OR chelat? OR complex? OR mineralization OR persistence OR ligand

Table 19: Search filters related to the technical section ecotoxicology

Ecotoxicology [Gly] AND the following search filters
tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR plant AND submerge? OR emerge? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator OR solitary OR alg? OR aquatic OR freshwater OR vertebrat? OR mammal? OR rat OR mouse OR mice OR rabbit OR hare OR protection OR model? OR vole OR pest OR arthropod? OR beneficials OR typhlodromus OR aphidius OR parasitoid OR predator OR chrysoperla OR Orius OR spider OR worm? OR ?worm OR Eisenia OR soil OR collembol? OR macro organism OR folsomia OR springtail OR decompos? OR micro organisms OR microorganisms OR microbial OR carbon OR nitrogen OR plant? OR vegetative vigo? OR seedling OR germination OR monocot? OR dicot? OR sewage OR activated sludge OR biodegrad? OR bioaccumulation? OR amphib? OR reptile? OR aquatic plant OR beneficial

2.4 Relevance assessment

After removal of duplicates, the remaining articles were assessed for their relevance. First, at “title / abstract level” (so-called “rapid assessment”) and second, at “full-text level” (so called “detailed assessment”).

Articles that were identified as “non-relevant” in the rapid assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For articles that were not excluded in the rapid assessment (potentially relevant articles and articles of an unclear relevance), a detailed relevance assessment of a full-text document was performed.

Articles that were identified as “non-relevant” in the detailed assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For both assessments (rapid and detailed) the same criteria for non-relevance were applied (see **Chapter 2.4.1** and **2.4.2**).

2.4.1 Criteria applied for “non-relevance”

Articles identified as “non-relevant” in the rapid and detailed assessments belong to one of the following categories and were excluded from further evaluation. A justification for their non-relevance was provided.

- Publications related to efficacy (resistance related articles, new uses of control of pest / crops) or to agricultural / biological research (crop science, breeding, fertilization, tillage, fundamental plant physiology / micro- / molecular biology).
- Publications dealing with analytical methods / development.
- Publications describing new methods of synthesis (discovery / developments) or other aspects of basic (organic / inorganic) chemistry.
- Patents.
- Wastewater treatment.
- Abstracts referring to a conference contribution that does not contain sufficient data / information for regulatory risk assessment.
- Publications focusing on genetically modified organisms / transgenic crops; no data directly relevant to glyphosate evaluation (e.g. crop compositional analysis, gene flow, protein characterization).
- Publications where glyphosate or a relevant metabolite were not the focus of the publication.
- Secondary information including scientific and regulatory reviews⁸.
- Articles dealing with political / socio / economic analysis.
- Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity).
- Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes.
- Findings not related to ecotoxicology, toxicology, residues, and environmental fate.
- Publications not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.).

⁸ Reviews have been partly evaluated on full text level as well – case by case decision.

- Publications dealing with a Roundup⁹ formulation / other glyphosate formulations that is not the representative formulation for the AIR5 dossier and thus not relevant to the EU glyphosate renewal.
- Publications dealing with general pesticide exposures (not glyphosate specific).
- Publications generating endpoints that are not relatable to the EU level regulatory risk assessment (e.g. findings based on enzyme, cellular and molecular level etc.).
- Opinion articles where no new data is provided that can be used for the EU regulatory risk assessment.

2.4.2 Additional criteria for articles on the health and exposure of glyphosate

The scientific literature on the health effects of glyphosate can be subdivided in two main parts:

- Articles containing data on glyphosate acid and salts and on the reference glyphosate formulation MON 52276, and
- Articles only containing data on glyphosate formulations and/or co-formulants that have a composition different from that of the reference formulation MON 52276.

In the case of articles only relating to glyphosate formulations *in vitro* testing with the exception of cell/tissue systems¹⁰ that are likely to come in direct contact with formulations and glyphosate formulations containing other active ingredients are excluded. The reason for the exclusion of *in vitro* testing of formulations to assess health effects as a result of systemic exposure is the presence of surfactants which produce cell toxicity based on the destabilization of the cell membrane and the mitochondrial membrane thus masking the specific toxicity of glyphosate. The toxicity of the co-formulants in combination with glyphosate is dependent on the concentration and the nature of the co-formulants and can be addressed on a case-by-case basis during the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

In the relevance of glyphosate data, those articles have been considered as not relevant (and reliable) for the assessment for systemic toxicity when only *in vitro* results are presented with glyphosate concentrations above 1 mM. This is because it is physiologically not possible to attain such concentrations in standard regulatory *in vivo* testing due to the limited oral bioavailability (approx. 20%), very low dermal absorption, and rapid systemic elimination of glyphosate in *in vivo* test systems. It thus makes no sense to include such data in the risk assessment of glyphosate. Exceptions can be made in the event of direct contact with formulations resulting in localized effects, but then there is the contribution of the toxicity of the co-formulants which can be better addressed in the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

⁹ Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contains a surfactant polyethoxylated tallow amine (also polyoxyethyleneamine, POEA) which is not permitted for use in the EU. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in articles dealing with POEA based Roundup formulations cannot be related to the representative formulation MON 52276 which is quaternary-ammonium based (and not POEA based).

¹⁰ Glyphosate-based herbicides (GBH) contain surfactants that destabilize the cell membrane and the mitochondrial membrane and thus produce a toxicity that is not representative for glyphosate (see Levine S. L. et al, *Cell Biol. Toxicol.* (2007) 23:385-400). This has been clearly demonstrated in the scientific literature and also in some papers reviewed for this submission where *in vitro* glyphosate toxicity is compared against that of GBH and surfactants.

The limit of 1 mM has been based on the single dose oral pharmacokinetic data of a formulation containing 71.7% w/w glyphosate where an oral dose of 1,430 mg/kg bw in the rat gives plasma levels of 38.1 µg/mL or 0.225 mM after 2 hours. When extrapolated linearly (which is possible for glyphosate because it is not subject to hepatic metabolism) this gives plasma levels of 53.3 µg/mL or 0.315 mM at 2 hours after oral intake of 2,000 mg/kg bw and 107 µg/mL or 0.630 mM at 2 hours after oral intake of 4,000 mg/kg bw. A systemic concentration of glyphosate of 1 mM would then represent an oral dose of more than 6,000 mg/kg bw which is completely unreasonable for repeat dose experimental *in vivo* testing under today's OECD test guidelines. The ADI for glyphosate of 0.5 mg/kg bw/day corresponds with a daily systemic concentration of 0.17 µg/mL or 1 µM when a 60 kg person with 36 L extracellular fluid is considered with a glyphosate oral bioavailability of 20%. The daily systemic dose of glyphosate on the day of application (i.e. highest exposure day), based on the geometric mean of 3.2 µg/L in urine, of glyphosate applicators in the US is approx. 0.0001 mg/kg bw/day (Acquavella, 2004¹¹) which is 1000 times less than the systemic dose (0.1 mg/kg bw) corresponding with the ADI oral dose of 0.5 mg/kg bw with 20% oral bioavailability.

Many articles that have been considered relevant for the risk assessment of glyphosate and have been assessed for reliability on full text basis, contain experimental data as well on glyphosate as such as on formulations (different from MON 52276) and co-formulants. In such cases, only the toxicology data pertinent to glyphosate and to the reference formulation (if that can be clearly stated by the author of the article) are summarized and discussed. In the case of articles on exposure monitoring and epidemiology, exposure to glyphosate formulations are considered.

2.4.3 Categorization of “relevant” articles at full-text level

Articles that were not excluded in the detailed assessment (see **Chapter 2.4.1** and **2.4.2**) were categorized as recommended in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092, Point 5.4.1.

- Category A** *Studies that provide data for establishing or refining risk assessment parameters. These studies should be summarised in detail following the subsequent steps of the OECD Guidance documents (OECD, 2005; 2006) and should be considered for reliability.*
- Category B** *Studies that are relevant to the data requirement, but in the opinion of the applicant provide only supplementary information that does not alter existing risk assessment parameters. A justification for such a decision should be provided.*
- Category C** *Studies for which relevance cannot be clearly determined. For each of these studies the applicants should provide an explanation of why the relevance of such studies could not be definitively determined.*

The list of Category A articles can be found in **Table 23** and **Table 24**. The list of Category B articles and the justifications can be found in **Table 25** and **Table 26**. The list of Category C articles and the explanations can be found in **Table 27** and **Table 28**.

¹¹ Acquavella J. F. *et al.* (2004), Environmental Health Perspectives, 112(3), 321-326.

2.5 Reliability assessment

For articles, which were identified, in the detailed assessment, as relevant articles of Category A (see **Chapter 2.4.3**) a reliability assessment was performed. The reliability criteria for each technical section are summarized in **Table 13 - Table 15**.

For relevant articles of Category A that were classified either as reliable or reliable with restrictions, summaries were compiled.

Articles of Category A which were classified as non-reliable were downgraded to articles of Category B and justification for such a decision was provided.

Table 103: Reliability criteria for ecotoxicology, environmental fate and residues

Applied for	Reliability criteria
Ecotoxicology, Environmental Fate, Residues	For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines are met.
Ecotoxicology, Environmental Fate, Residues	(No) previous exposure to other chemicals is documented (where relevant).
Ecotoxicology	For aquatic studies, the test substance is dissolved in water or where a carrier is required, it is appropriate (non-toxic) and a carrier control / positive control is considered in the test design.
Environmental Fate, Residues	The test substance is dissolved in water or non-toxic solvent.
Ecotoxicology, Environmental Fate, Residues	Test item is sufficiently documented, and reported (i.e. purity, source, content, storage conditions).
Ecotoxicology	For tests including vertebrates, compliance of the batches used in toxicity studies compared to the technical specification.
Ecotoxicology	Species used in the experiment are clearly reported, including source, experimental conditions (where relevant): strain, adequate age/life stage, body weight, acclimatization, temperature, pH, oxygen (dissolved oxygen for aquatic tests) content, housing, light conditions, humidity (terrestrial species) incubation conditions, feeding.
Ecotoxicology	The validity criteria from relevant test guidelines can be extrapolated across different species but not necessarily across different test designs. If different, then the nature of the difference and impact should ideally be discussed.
Ecotoxicology, Environmental Fate, Residues	Only glyphosate or its metabolites is the test substance (excluding mixture), and information on application of the test substance is described.
Ecotoxicology, Environmental Fate, Residues	The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite).
Ecotoxicology, Environmental Fate, Residues	Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
Ecotoxicology, Environmental Fate, Residues	Analytical verifications performed in test media (concentration) / collected samples, stability of the test substance in test medium should be documented.

Applied for	Reliability criteria
Ecotoxicology	The test has been performed in several dose levels (at least 3) including a positive / negative control where relevant.
Ecotoxicology	Suitable exposure throughout the whole exposure period was demonstrated and reported.
Ecotoxicology	A clear concentration response relationship is reported – in studies where the dose response test design is employed.
Ecotoxicology	A sufficient number of animals per group to facilitate statistical analysis reported: mortality in control groups reported, observations/findings in positive/negative control clearly reported (where relevant).
Ecotoxicology, Environmental Fate, Residues	Assessment of the statistical power of the assay is possible with reported data.
Ecotoxicology, Environmental Fate, Residues	Statistical methodology is reported (e.g., checking the plots and confidence intervals).
Ecotoxicology	Description of the observations (including time-points), examinations, and analyses performed, with (where relevant) dissections being well documented.
Ecotoxicology	For terrestrial ecotoxicological studies in the laboratory or the field, the substrates used should be adequately described e.g. nature of substrate i.e. species of leaf or soil type.
Ecotoxicology, Environmental Fate, Residues	Field locations relevant / comparable to European conditions.
Ecotoxicology, Environmental Fate, Residues	Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon).
Ecotoxicology, Environmental Fate	Other soils where information on characterization by the parameters: pH, texture, CEC, organic carbon, bulk density, water holding capacity, microbial biomass.
Ecotoxicology, Environmental Fate, Residues	For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year.
Ecotoxicology, Environmental Fate	For soil samples, sampling from A-horizon, top 20 cm layers; soils freshly from field preferred (storage max 3 months at 4 +/- 2°C).
Ecotoxicology, Environmental Fate, Residues	Data on precipitation is recorded.
Environmental Fate	The temperature was in the range between 20-25°C and the moisture was reported.
Environmental Fate	The presence of glyphosate identified in samples were collected from European groundwater, soil, surface waters, sediments or air.
Ecotoxicology	For lab terrestrial studies, the temperature was appropriate to the species being tested and generally should fall within the range between 20-25°C and soil moisture / relative humidity was reported.
Ecotoxicology	For bee studies, temperature of the study should be appropriate to species.
Ecotoxicology	For lab aquatic studies:
	The source and / or composition of the media used should be described.
	The temperature of the water should be appropriate to the species being tested and generally fall within the 15-25°C.

Applied for	Reliability criteria
Ecotoxicology, Residues	The residue data can be linked to a clearly described GAP table, appropriate in the context of the renewal of approval of glyphosate (crop, application method, doses, intervals, PHI).
Ecotoxicology, Environmental Fate, Residues	Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate, and where relevant its metabolites.
Ecotoxicology, Environmental Fate, Residues	Analytical methods are clearly described; and adequate statement of specificity and sensitivity of the analytical methods is included.
Ecotoxicology	Assessment of the ECX for the width of the confidence interval around the median value; and the certainty on the level of protection offered by the median ECX is reported.
Environmental Fate	Radiolabel characterization: purity, specific activity, location of label is reported.
Environmental Fate	If degradation kinetics are included: data tables / model description / statistical parameters for kinetic fit to be provided.
Environmental Fate, Residues	Monitoring data: description of matrix analysed, and analytical methods to be fully described.
Environmental Fate	Clear description of application rate and relevance to approved uses.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 14: Reliability criteria for toxicology – epidemiology and exposure studies

Reliability criteria – toxicology	
Epidemiology studies	Exposure studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines/practices	Study in accordance to valid internationally accepted testing guidelines/practices
Study completely described and conducted following scientifically acceptable standards	Study performed according to GLP
	Study completely described and conducted following scientifically acceptable standards
Test substance	Test substance
Exposure to formulations with only glyphosate as a.i.	Exposure to formulations with only glyphosate as a.i.
Exposure to formulations with glyphosate combined with other a.i.	Exposure to formulations with glyphosate combined with other a.i.
Exposure to various formulations of pesticides	Exposure to various formulations of pesticides
Study	Study
Study design – epidemiological method followed	Study design clearly described
Description of population investigated	Population investigated sufficiently described
Description of exposure circumstances	Exposure circumstances sufficiently described
Description of results	Sampling scheme sufficiently documented
Have confounding factors been considered	Analytical method described in detail
Statistical analysis	Validation of analytical method reported
	Monitoring results reported
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 1511: Reliability criteria for toxicology – *in vitro* and *in vivo* studies

Reliability criteria – toxicology and metabolism	
<i>In vitro</i> studies	<i>In vivo</i> studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines	Study in accordance to valid internationally accepted testing guidelines.
Study performed according to GLP	Study performed according to GLP
Study completely described and conducted following scientifically acceptable standards	Study completely described and conducted following scientifically acceptable standards
Test substance	Test substance
Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions)	Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions)
Only glyphosate acid or one of its salts is the tested substance	Only glyphosate acid or one of its salts is the tested substance
AMPA is the tested substance	AMPA is the tested substance
Study	Study
Test system clearly and completely described	Test species clearly and completely described
Test conditions clearly and completely described	Test conditions clearly and completely described
Metabolic activation system clearly and completely described	Route and mode of administration described
Test concentrations in physiologically acceptable range (< 1 mM)	Dose levels reported
Cytotoxicity tests reported	Number of animals used per dose level reported
Positive and negative controls	Method of analysis described for analysis test media
Complete reporting of effects observed	Validation of the analytical method
Statistical methods described	Analytical verifications of test media
Historical negative and positive control data reported	Complete reporting of effects observed
Dose-effect relationship reported	Statistical methods described
	Historical control data of the laboratory reported
	Dose-effect relationship reported
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

3 Search results

The full outcome of the literature search and evaluation is provided below.

Table 16: Summary of the literature search – all technical sections

	Number	Justification
Total number of articles retrieved from the search.	9947	n.a.
Total number of articles after removal of duplicates within all databases.	n.a.	n.a.
Total number of articles after manual removal of duplicates.	3294	n.a.
Number of articles excluded after rapid assessment (title / abstract).	3050	n.a.
Total number of full-text documents assessed in detail.	244	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	166	See Table 29
Number of articles not excluded after detailed assessment. ^{a)}	78	See Table 23-Table 28
Number of summaries presented in the dossier. ^{b)}	13	See Table 23, Table 24

^{a)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, Point 5.4.1). For details, please refer to Chapter 2.4.3.

^{b)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 17: Results of the article selection process for ecotoxicology

	Number	Justification
Total number of articles after manual removal of duplicates.	123	n.a.
Number of articles excluded after rapid assessment (title / abstract).	24	n.a.
Total number of full-text documents assessed in detail.	99	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	69	See Table 29
Number of articles not excluded after detailed assessment. ^{a)}	30	See Table 23-Table 28
Number of summaries presented in the dossier. ^{b)}	7	See Table 23, Table 24

^{a)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, Point 5.4.1). For details, please refer to Chapter 2.4.3.

^{b)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 18: Results of the article selection process for environmental fate

	Number	Justification
Total number of articles after manual removal of duplicates.	80	n.a.
Number of articles excluded after rapid assessment (title / abstract).	18	n.a.
Total number of full-text documents assessed in detail.	65	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	49	See Table 29
Number of articles not excluded after detailed assessment. ^{a)}	16	See Table 23-Table 28
Number of summaries presented in the dossier. ^{b)}	0	n.a.

^{a)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, Point 5.4.1). For details, please refer to Chapter 2.4.3.

^{b)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 19: Results of the article selection process for residues

	Number	Justification
Total number of articles after manual removal of duplicates.	13	n.a.
Number of articles excluded after rapid assessment (title / abstract).	12	n.a.
Total number of full-text documents assessed in detail.	1	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	0	See Table 29
Number of articles not excluded after detailed assessment ^{a)}	1	See Table 23-Table 28
Number of summaries presented in the dossier ^{b)}	0	n.a.

^{a)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{b)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 20: Results of the article selection process for toxicology

	Number	Justification
Total number of articles after manual removal of duplicates	106	n.a.
Number of articles excluded after rapid assessment (title / abstract).	30	n.a.
Total number of full-text documents assessed in detail	76	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	45	See Table 29
Number of articles not excluded after detailed assessment ^{a)}	31	See Table 23-Table 28
Number of summaries presented in the dossier ^{b)}	6	See Table 23, Table 24

^{a)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{b)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 21: Results of the article selection process for efficacy

	Number	Justification
Total number of articles after manual removal of duplicates.	2	n.a.
Number of articles excluded after rapid assessment (title / abstract).	0	n.a.
Total number of full-text documents assessed in detail.	2	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	2	See Table 29
Number of articles not excluded after detailed assessment. ^{a)}	0	n.a.
Number of summaries presented in the dossier. ^{b)}	0	n.a.

^{a)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{b)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 22: Results of the article selection process for “other non-relevant categories”

	Number	Justification
Total number of articles after manual removal of duplicates.	2967	n.a.
Number of articles excluded after rapid assessment (title / abstract).	2966	n.a.
Total number of full-text documents assessed in detail.	1	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	1	See Table 29
Number of articles not excluded after detailed assessment. ^{a)}	0	n.a.
Number of summaries presented in the dossier. ^{b)}	n.a.	n.a.

^{a)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{b)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 23: Relevant (category A) & reliable or reliable with restrictions articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Classification (cat a/b/c) /justification
3031	CA 5.1.1	Anadon et al.	2009	Toxicokinetics of glyphosate and its metabolite aminomethyl phosphonic acid in rats .	Toxicology letters, (2009 Oct 08) Vol. 190, No. 1, pp. 91-5	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
140	CA 5.9.4.	Andreotti et al.	2009	Agricultural pesticide use and pancreatic cancer risk in the Agricultural Health Study Cohort.	International Journal of Cancer, (15 May 2009) Vol. 124, No. 10, pp. 2495-2500	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
2209	CA 5.9.4.	Hoppin et al.	2006	Pesticides and adult respiratory outcomes in the agricultural health study.	Ann. N. Y. Acad. Sci., Vol. 1076, Issue Living in a Chemical World, Page 343-354, Publication Year 2006	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
2206	CA 5.9.4.	Lee et al.	2007	Pesticide use and colorectal cancer risk in the Agricultural Health Study.	Int. J. Cancer, Vol. 121, Issue 2, Page 339-346, Publication Year 2007	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
1697	CA 5.9.4.	Weselak et al.	2007	In utero pesticide exposure and childhood morbidity.	Environmental Research, (JAN 2007) Vol. 103, No. 1, pp. 79-86	5.4.1 case a) relevant and provides data for the risk assessment: This was a retrospective cohort study conducted in Canada as part of the Ontario Farm Family Health Study (OFFHS). A short summary for this article is provided.
2196	CA 5.9.4.	Eriksson et al.	2008	Pesticide exposure as risk factor for non-Hodgkin lymphoma including histopathological subgroup analysis.	International journal of cancer, (2008 Oct 01) Vol. 123, No. 7, pp. 1657-63.	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
3084	CA 8.1.4 CA 8.7	Rohr et al.	2008	Understanding the net effects of pesticides on amphibian trematode infections.	Ecological applications : a publication of the Ecological Society of America, (2008 Oct) Vol. 18, No. 7, pp. 1743-53	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
3012	CA 8.2.1	Langiano Vivian Do Carmo et al.	2008	Toxicity and effects of a glyphosate -based herbicide on the Neotropical fish Prochilodus lineatus.	Comparative biochemistry and physiology. Toxicology and pharmacology : CBP, (2008 Mar) Vol. 147, No. 2, pp. 222-31	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
1124	CA 8.2.1 CA 8.2.2	Stehr et al.	2009	Evaluating the Effects of Forestry Herbicides on Fish Development Using Rapid Phenotypic Screens	North American Journal of Fisheries Management [N. Am. J. Fish. Manage.]. Vol. 29, no. 4, pp. 975-984. Aug 2009	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
3016	CA 8.2.4.1 CA 8.2.6.1	Pereira et al.	2009	Toxicity evaluation of three pesticides on non-target aquatic and soil organisms: commercial formulation versus active ingredient.	Ecotoxicology (London, England), (2009 May) Vol. 18, No. 4, pp. 455-63	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
100	CA 8.2.4.2 CA 8.2.5.2	Bringolf et al.	2007	Acute and chronic toxicity of glyphosate compounds to glochidia and juveniles of <i>Lampsilis siliquoidea</i> (Unionidae).	Environmental toxicology and chemistry, (2007 Oct) Vol. 26, No. 10, pp. 2094-100	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
834	CA 8.2.6.1	Vendrell et al.	2009	Effect of glyphosate on growth of four freshwater species of phytoplankton: a microplate bioassay.	Bulletin of environmental contamination and toxicology, (2009 May) Vol. 82, No. 5, pp. 538-42	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Classification (cat a/b/c) /justification
413	CP 10.6.2 CA 8.2.7 CA 8.2.6.1	Cedergreen et al.	2007	Combination effects of herbicides on plants and algae: do species and test systems matter?	Pest Management Science (2007), 63(3), 282-295	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.

Table 24: Relevant (category A) & reliable or reliable with restrictions articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Classification (cat a/b/c) /justification
3031	Anadon et al.	CA 5.1.1	2009	Toxicokinetics of glyphosate and its metabolite aminomethyl phosphonic acid in rats .	Toxicology letters, (2009 Oct 08) Vol. 190, No. 1, pp. 91-5	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
140	Andreotti et al.	CA 5.9.4.	2009	Agricultural pesticide use and pancreatic cancer risk in the Agricultural Health Study Cohort.	International Journal of Cancer, (15 May 2009) Vol. 124, No. 10, pp. 2495-2500	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
100	Bringolf et al.	CA 8.2.4.2 CA 8.2.5.2	2007	Acute and chronic toxicity of glyphosate compounds to glochidia and juveniles of <i>Lampsilis siliquoidea</i> (Unionidae).	Environmental toxicology and chemistry, (2007 Oct) Vol. 26, No. 10, pp. 2094-100	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
413	Cedergreen et al.	CP 10.6.2 CA 8.2.7 CA 8.2.6.1	2007	Combination effects of herbicides on plants and algae: do species and test systems matter?	Pest Management Science (2007), 63(3), 282-295	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
2196	Eriksson et al.	CA 5.9.4.	2008	Pesticide exposure as risk factor for non-Hodgkin lymphoma including histopathological subgroup analysis.	International journal of cancer, (2008 Oct 01) Vol. 123, No. 7, pp. 1657-63.	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
2209	Hoppin et al.	CA 5.9.4.	2006	Pesticides and adult respiratory outcomes in the agricultural health study.	Ann. N. Y. Acad. Sci., Vol. 1076, Issue Living in a Chemical World, Page 343-354, Publication Year 2006	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
3012	Langiano Vivian Do Carmo et al.	CA 8.2.1	2008	Toxicity and effects of a glyphosate -based herbicide on the Neotropical fish <i>Prochilodus lineatus</i> .	Comparative biochemistry and physiology. Toxicology and pharmacology : CBP, (2008 Mar) Vol. 147, No. 2, pp. 222-31	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
2206	Lee et al.	CA 5.9.4.	2007	Pesticide use and colorectal cancer risk in the Agricultural Health Study.	Int. J. Cancer, Vol. 121, Issue 2, Page 339-346, Publication Year 2007	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
3016	Pereira et al.	CA 8.2.4.1 CA 8.2.6.1	2009	Toxicity evaluation of three pesticides on non-target aquatic and soil organisms: commercial formulation versus active ingredient.	Ecotoxicology (London, England), (2009 May) Vol. 18, No. 4, pp. 455-63	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
3084	Rohr et al.	CA 8.1.4 CA 8.7	2008	Understanding the net effects of pesticides on amphibian trematode infections.	Ecological applications : a publication of the Ecological Society of America, (2008 Oct) Vol. 18, No. 7, pp. 1743-53	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
1124	Stehr et al.	CA 8.2.1 CA 8.2.2	2009	Evaluating the Effects of Forestry Herbicides on Fish Development Using Rapid Phenotypic Screens	North American Journal of Fisheries Management [N. Am. J. Fish. Manage.]. Vol. 29, no. 4, pp. 975-984. Aug 2009	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
834	Vendrell et al.	CA 8.2.6.1	2009	Effect of glyphosate on growth of four freshwater species of phytoplankton: a microplate bioassay.	Bulletin of environmental contamination and toxicology, (2009 May) Vol. 82, No. 5, pp. 538-42	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Classification (cat a/b/c) /justification
1697	Weselak et al.	CA 5.9.4.	2007	In utero pesticide exposure and childhood morbidity.	Environmental Research, (JAN 2007) Vol. 103, No. 1, pp. 79-86	5.4.1 case a) relevant and provides data for the risk assessment: This was a retrospective cohort study conducted in Canada as part of the Ontario Farm Family Health Study (OFFHS). A short summary for this article is provided.

Table 25: Relevant but supplementary (category B) articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
243	CA 5.7	Radio et al.	2008	Assessment of Chemical Effects on Neurite Outgrowth in PC12 cells Using High Content Screening.	Toxicol. Sci., Vol. 105, Issue 1, Page 106-118, Publication Year 2008	5.4.1 case b) relevant but supplementary information: The data presented in this study provide only supportive information for the risk assessment regarding effect of glyphosate on outgrowth of neurites in differentiated Neuroscreen-1 cells.
1336	CA 5.8.1	Manas et al.	2009	Genotoxicity of AMPA, the environmental metabolite of glyphosate, assessed by the Comet assay and cytogenetic tests.	Ecotoxicology and environmental safety, (2009 Mar) Vol. 72, No. 3, pp. 834-7	5.4.1 case b) relevant but supplementary information: The publication is providing genotoxicity information on AMPA via in vitro Comet assay in Hep-2, chromosome aberration test in human lymphocytes and in vivo micronucleus test in mice. The article was downgraded to Category B due to its non-reliability.
174	CA 5.8.2	Abass et al.	2009	An evaluation of the cytochrome P450 inhibition potential of selected pesticides in human hepatic microsomes.	J. Environ. Sci. Health, Part B, Vol. 44, Issue 6, Page 553-563, Publication Year 2009	5.4.1 case b) relevant but supplementary information: The study provides only supplementary information on hepatic CYP interaction in vitro; results do not change the existing risk assessment.
332	CA 5.8.2	Chan et al.	2007	Cardiovascular effects of herbicides and formulated adjuvants on isolated rat aorta and heart.	Toxicol. in Vitro, Vol. 21, Issue 4, Page 595-603, Publication Year 2007	5.4.1 case b) relevant but supplementary information: The article is relevant for the risk assessment since it analyses the effects on cardiovascular cells exposed to glyphosate technical grade. Although only additional information is provided for the risk assessment.
598	CA 5.8.2	Hultberg et al.	2007	Cysteine turnover in human cell lines is influenced by glyphosate.	Environmental Toxicology and Pharmacology, (JUL 2007) Vol. 24, No. 1, pp. 19-22	5.4.1 case b) relevant but supplementary information: The article is providing only supplementary information for the risk assessment regarding the effect of Glyphosate to intra and extra cellular cysteine and glutathione levels.
1296	CA 5.8.2	Mclaughlin et al.	2008	Functional expression and comparative characterization of nine murine cytochromes P 450 by fluorescent inhibition screening	Drug Metabolism and Disposition, (2008) Vol. 36, No. 7, pp. 1322-1331	5.4.1 case b) relevant but supplementary information: The data presented in this study provide only supportive information for the risk assessment regarding potential interaction of glyphosate with mouse and human P450s involved in xenobiotic metabolism.
155	CA 5.8.3	Hokanson et al.	2007	Alteration of estrogen-regulated gene expression in human cells induced by the agricultural and horticultural herbicide glyphosate.	Human and experimental toxicology, (2007 Sep) Vol. 26, No. 9, pp. 747-52	5.4.1 case b) relevant but supplementary information: The toxicity of glyphosate product (15%) was examined as a function of its capacity to alter gene expression (29 up and down regulated genes) in the presence or absence of estrogen. Temporal altered gene expression is not a biomarker for toxicity, but rather, may be within the range of normal biological responses of homeostasis. In vitro cytotoxicity of surfactants, however, is a significant confounder in data interpretation. Data do not reflect real in vivo exposure situations, and therefore only provides supporting information for human risk assessment purposes.
297	CA 5.9.4.	Bolognesi et al.	2009	Biomonitoring of genotoxic risk in agricultural workers from five colombian regions: association to occupational exposure to glyphosate.	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 986-97	5.4.1 case b) relevant but supplementary information: This article was downgraded to Category B due to its non-reliability. This publication is considered relevant for the risk assessment of glyphosate, but as supplementary material, and as not reliable. Information necessary to classify health outcome was not collected

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						at the individual participant level; it is not possible to assess the health outcome in relation to any exposure using the results reported in this study. Additionally, exposure classification was based on self-reported glyphosate exposure, an indirect method by which to estimate exposure status of study participants. No biological evidence is provided to support exposure classification of study participants. Misclassification of either exposure, outcome, or both is possible in this study.
2270	CA 5.9.4.	Caldas et al.	2008	Poisonings with pesticides in the Federal District of Brazil.	Clin. Toxicol., Vol. 46, Issue 10, Page 1058-1063, Publication Year 2008	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
108	CA 5.9.4.	Calvert et al.	2008	Acute pesticide poisoning among agricultural workers in the United States, 1998-2005.	American Journal of Industrial Medicine, (December 2008) Vol. 51, No. 12, pp. 883-898	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
2198	CA 5.9.4.	Dasgupta et al.	2007	Pesticide poisoning of farm workers-implications of blood test results from Vietnam.	Int. J. Hyg. Environ. Health, Vol. 210, Issue 2, Page 121-132, Publication Year 2007	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
377	CA 5.9.4.	Firth et al.	2007	Chemical exposure among NZ farmers.	International journal of environmental health research, (2007 Feb) Vol. 17, No. 1, pp. 33-43	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
2208	CA 5.9.4.	Horiuchi et al.	2008	Pesticide-related dermatitis in Saku district, Japan, 1975-2000.	International journal of occupational and environmental health, (2008 Jan-Mar) Vol. 14, No. 1, pp. 25-34	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
136	CA 5.9.4.	Naidoo et al.	2008	Agricultural activities, pesticide use and occupational hazards among women working in small scale farming in Northern KwaZulu-Natal, South Africa.	Int. J. Occup. Environ. Health, Vol. 14, Issue 3, Page 218-224, Publication Year 2008	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
3281	CA 5.9.4.	Recena et al.	2006	Pesticides exposure in Culturama, Brazil-Knowledge, attitudes, and practices	Environmental Research, (2006) Vol. 102, No. 2, pp. 230-236	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
2416	CA 5.9.4.	Sanin et al.	2009	Regional differences in time to pregnancy among fertile women from five Colombian regions with different use of glyphosate .	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 949-60	5.4.1 case b) relevant but supplementary information: This article was downgraded to Category B due to its non-reliability. This publication is considered relevant for the risk assessment of glyphosate, but as supplementary material, and as not reliable. Information necessary to classify health outcome was not collected at the individual participant level; no biological evidence is provided to support exposure classification of study participants. Misclassification of exposure is possible in this study. It is not possible to assess the health outcome in relation to exposure using the results reported in this study.
1257	CA 5.9.4.	Settimi et al.	2008	Findings from the Italian Program for Surveillance of Acute Pesticide-related Illness, 2005	Clinical Toxicology [Clin. Toxicol.], (20080600) vol. 46, no. 5, p. 388	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
2418	CA 5.9.4.	Sudakin et al.	2009	Regional variation in the severity of pesticide exposure outcomes: applications of geographic information systems and spatial scan statistics	Clinical Toxicology, (2009) Vol. 47, No. 3, pp. 248-252	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
1006	CA 6.5.3	Saka et al.	2008	Effects of processing and cooking on the levels of pesticide residues in soybean samples.	Shokuhin Eiseigaku Zasshi, (JUN 2008) Vol. 49, No. 3, pp. 160-167.	5.4.1 case b) relevant but supplementary information: It provides the information on Pfs that can be used supportive of setting the MRLs. However, in the current Japanese MRL setting system, the MRL for soybean is set for RAC and Pfs for soy bean products are not reflected into the dietary risk assessment.
1231	CA 7.1.2	Simonsen et al.	2008	Fate and availability of glyphosate and AMPA in agricultural soil .	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2008 Jun) Vol. 43, No. 5, pp. 365-75	5.4.1 case b) relevant but supplementary information: The experimental setup and analytical method are quite well described. The study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Tested soil was not glyphosate free.
623	CA 7.1.2 CA 7.1.3.1	Mamy et al.	2007	Desorption and time-dependent sorption of herbicides in soils	European journal of soil science (2007) , Vol. 58, No. 1, pp. 174-187	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method are quite well described. The study has some deficiencies and results are not presented in detail. Thus, endpoints cannot be verified.
1000	CA 7.1.3.1	Caceres-Jensen et al.	2009	Adsorption of glyphosate on variable-charge, volcanic ash-derived soils .	Journal of environmental quality, (2009 Jul-Aug) Vol. 38, No. 4, pp. 1449-57	5.4.1 case b) relevant but supplementary information: Volcanic ash soils were investigated. These are not relevant for EU but can be relevant for Japan. The experimental setup is quite well described. The study has some deficiencies and results are not presented in detail. Thus, endpoints cannot be verified.
1576	CA 7.1.3.1	Farenhorst et al.	2008	Herbicide sorption coefficients in relation to soil properties and terrain attributes on a cultivated prairie.	Journal of environmental quality, (2008 May-Jun) Vol. 37, No. 3, pp. 1201-8	5.4.1 case b) relevant but supplementary information: The article investigated the adsorption of glyphosate on soil. 287 surface soils (0–15 cm) collected in a 10 × 10 m grid across a heavily eroded, undulating, calcareous prairie landscape in Minnesota (U.S.). Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Adsorption coefficients are only presented a mean values for respective slopes of the sampling location. The study is considered not reliable.
1722	CA 7.1.3.1	Accinelli et al.	2006	Influence of Cry1Ac toxin on mineralization and bioavailability of glyphosate in soil .	Journal of agricultural and food chemistry (2006) , Vol. 54, No. 1, pp. 164-169	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.
1896	CA 7.1.3.1	Candela et al.	2007	Laboratory studies on glyphosate transport in soils of the Maresme area near Barcelona, Spain: Transport model parameter estimation.	Geoderma, (JUN 15 2007) Vol. 140, No. 1-2, pp. 8-16	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.
2669	CA 7.1.3.1	Sorensen et al.	2006	Sorption , desorption and mineralisation of the herbicides	Environmental pollution (2006) , Vol. 141, No. 1, pp. 184-194	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
				glyphosate and MCPA in samples from two Danish soil and subsurface profiles.		deficiencies and results are not presented in details. One soil site was heavily used for agriculture in the past - the usage of glyphosate is likely. Thus, endpoints cannot be verified. Experiments were performed at 10°C. Additionally, no parental mass balance was established.
2671	CA 7.1.3.1	Al-Rajab et al.	2008	Sorption and leaching of 14 C-glyphosate in agricultural soils	Agronomy for Sustainable Development (Jul 2008) Vol. 28, No. 3, pp. 419-428	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. However, details in the method description are unclear (especially equilibration time). Study has some deficiencies and results are not presented in details. Additionally, no parental mass balance was established. Thus, endpoints cannot be verified.
3128	CA 7.1.3.1	Jacobsen et al.	2008	Variation of MCPA, metribuzine, methyltriazine-amine and glyphosate degradation, sorption, mineralization and leaching in different soil horizons.	Environ. Pollut. (Oxford, U. K.), Vol. 156, Issue 3, Page 794-802, Publication Year 2008	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Experiments were performed at 10°C and only one concentration was used. Additionally, no parental mass balance was established.
3130	CA 7.1.3.1	Farenhorst et al.	2009	Variations in soil properties and herbicide sorption coefficients with depth in relation to PRZM (pesticide root zone model) calculations	Geoderma (2009) , Vol. 150, No. 3-4, pp. 267-277 Source Note: 2009 May 15, v. 150, issue 3-4	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Additionally, no parental mass balance was established. Thus, endpoints cannot be verified.
1010	CA 7.1.3.1	Laitinen et al.	2008	Effects of soil phosphorus status on environmental risk assessment of glyphosate and glufosinate-ammonium.	J. Environ. Qual., Volume 37, Issue 3, Page 830-838, Publication Year 2008	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described, however several details are not reported (e.g. which phase was analysed). Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.
2174	CA 7.1.3.1.1 CA 7.1.3.1.2	Gjettermann et al.	2009	Particle-facilitated pesticide leaching from differently structured soil monoliths.	Journal of environmental quality, (2009 Nov-Dec) Vol. 38, No. 6, pp. 2382-93	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described, however several details are not reported (e.g. which phase was analysed). Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.
2026	CA 7.1.4.2	Grundmann et al.	2008	Mineralization and Transfer Processes of 14C-labeled Pesticides in Outdoor Lysimeters	Water, air and soil pollution. Focus (2008) , Vol. 8, No. 2, pp. 177-185	5.4.1 case b) relevant but supplementary information: The study has several deficiencies. Furthermore, experimental set-up and analytical results are not described in detail.
1442	CA 7.1.4.3	Laitinen et al.	2009	Glyphosate and phosphorus leaching and residues in boreal sandy soil	PLANT AND SOIL, (OCT 2009) Vol. 323, No. 1-2, Sp. iss. SI, pp. 267-283	5.4.1 case b) relevant but supplementary information: The study does not represent worst case condition. The study period was dry in the whole Southern and Central Finland causing exceptionally low groundwater table levels and droughts in spring 2003. During the whole study the total precipitation was 867 mm in the experimental field, representing 80% of the long-term precipitation. Furthermore, the leaching field was situated in an intensively cultivated region,

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						where the use of glyphosate is common.
1238	CA 7.2.1.2	Chen et al.	2007	Fe(III)-pyruvate and Fe(III)-citrate induced photodegradation of Glyphosate in aqueous solutions	Journal of Coordination Chemistry, (2007) Vol. 60, No. 22, pp. 2431-2439	5.4.1 case b) relevant but supplementary information: The article shows that glyphosate is stable to photolysis at wavelengths ≥ 365 nm. According to the guideline, waverlength ≥ 290 nm should be investigated.
644	CA 7.5	Popp et al.	2008	Determination of glyphosate and AMPA in surface and waste water using high-performance ion chromatography coupled to inductively coupled plasma dynamic reaction cell mass spectrometry (HPIC-ICP-DRC-MS)	Analytical and bioanalytical chemistry (2008) , Vol. 391, No. 2, pp. 695-699	5.4.1 case b) relevant but supplementary information: Details on sampling like exact location, timing, duration and sampling method are not available. Therefore, results cannot be related to the application schedule of glyphosate. Furthermore, available information on the analytical method and its validation does not allow for a full assessment of its acceptability.
23	CA 8.1.4 CA 8.2.8	Relyea et al.	2009	A cocktail of contaminants: how mixtures of pesticides at low concentrations affect aquatic communities .	Oecologia, (2009 Mar) Vol. 159, No. 2, pp. 363-76	5.4.1 case b) relevant but supplementary information: Provides information on the effects of glyphosate on phytoplankton, zooplankton and periphyton and larval development of amphibians but no risk assessment relevant endpoints are presented.
996	CA 8.1.5	Quassinti et al.	2009	Effects of paraquat and glyphosate on steroidogenesis in gonads of the frog <i>Rana esculenta</i> in vitro	Pesticide biochemistry and physiology (2009) , Vol. 93, No. 2, pp. 91-95	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
1601	CA 8.2.1	Ayoola et al.	2008	Histopathological effects of glyphosate on juvenile African catfish (<i>Clarias gariepinus</i>).	American-Eurasian Journal of Agricultural and Environmental Science (2008) , Vol. 4, No. 3, pp. 362-367	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
3269	CA 8.2.1	Carriquiriborde et al.	2006	Ecotoxicological studies on the pejerrey (<i>Odontesthes bonariensis</i> , Pisces Atherinopsidae).	Biocell, (2006) Vol. 30, No. 1, pp. 97-109	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
3024	CA 8.2.1 / CP 10.2.1	Ayoola et al.	2008	Toxicity of glyphosate herbicide on Nile tilapia (<i>Oreochromis niloticus</i>) juvenile.	African Journal of Agricultural Research (2008) , Vol. 3, No. 12, pp. 825-834	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
197	CA 8.2.4.1 CA 8.2.4.2	Dominguez-Cortinas et al.	2008	Analysis of the toxicity of glyphosate and Faena (R) using the freshwater invertebrates	Toxicological and Environmental Chemistry, (2008) Vol. 90, No. 2, pp. 377-384	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
				<i>Daphnia magna</i> and <i>Lecane quadricornata</i> .		item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
1119	CA 8.2.4.1 CA 8.2.4.2	Melnichuk et al.	2007	Estimation of toxicity of glyphosate -based herbicides by biotesting method using Cladocera.	Hydrobiological Journal, (2007) Vol. 43, No. 3, pp. 80-91	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
3028	CA 8.2.4.2 CA 8.2.5.2	Achiomo et al.	2008	Toxicity of the herbicide glyphosate to <i>Chordodes nobilii</i> (Gordiida, Nematomorpha).	Chemosphere, (2008 May) Vol. 71, No. 10, pp. 1816-22	5.4.1 case b) relevant but supplementary information: Data on adult mortality are not relevant, because the test was conducted with a Roundup formulation. The endpoint for larvae is based on infective capacity (of previously exposed larvae or embryos) for which significant differences compared to control were demonstrated at all tested concentrations. Therefore, a LOEC is the only endpoint that can be established from this study and a LOEC cannot be used in the aquatic RA. Results are considered as only supportive.
939	CA 8.2.4.2 CA 8.2.5.2	Melnichuk et al.	2007	Effects of Fakel herbicide on vital activity of <i>Ceriodaphnia affinis</i> in acute and chronic experiments.	Hydrobiological Journal, (2007) Vol. 43, No. 6, pp. 83-91	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
2945	CA 8.2.5.1	Papchenkova et al.	2009	The parameters of reproduction , sizes, and activities of hydrolases in <i>Daphnia magna</i> straus of successive generations affected by Roundup herbicide.	Inland Water Biology, (JUL 2009) Vol. 2, No. 3, pp. 286-291	5.4.1 case b) relevant but supplementary information: The article shows significant effects compared to the control for some variables and no effects for some other, so no clear endpoint from this study can be used for the risk assessment. Results are considered as only supportive.
751	CA 8.2.6.2	Ruan et al.	2008	Effects of acute glyphosate exposure on the growth and physiology of <i>Nostoc sphaeroides</i> , an edible cyanobacterium of paddy rice fields.	Acta Hydrobiologica Sinica, (JUL 2008) Vol. 32, No. 4, pp. 462-468	5.4.1 case b) relevant but supplementary information: Taking into account that the sampling dates and measured variables do not comply with guidelines, the results of the study are considered only as supportive/supplementary.
698	CA 8.2.7	Nielsen et al.	2007	Direct and indirect effects of the herbicides Glyphosate , Bentazone and MCPA on eelgrass (<i>Zostera marina</i>).	Aquatic toxicology (Amsterdam, Netherlands), (2007 Apr 20) Vol. 82, No. 1, pp. 47-54	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
2915	CA 8.2.7 CP 10.2.1	Turgut et al.	2006	The impact of pesticides toward parrotfeather when applied at the predicted environmental concentration	Chemosphere (2006), Vol. Date 2007, 66(3), 469-473	5.4.1 case b) relevant but supplementary information: The article shows significant effects compared to the control at the only tested rate for some variables and no effects for some other, so no clear endpoint from this study can be used for the risk assessment. Results

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						are considered as only supportive.
997	CA 8.2.8	Widenfalk et al.	2008	Effects of pesticides on community composition and activity of sediment microbes -- responses at various levels of microbial community organization.	Environmental pollution (Barking, Essex : 1987), (2008 Apr) Vol. 152, No. 3, pp. 576-84	5.4.1 case b) relevant but supplementary information: Detected effects of this study are based on molecular methods that cannot be univocally integrated in the risk assessment. In addition a LOEC cannot be used in the aquatic RA. The article failed to demonstrate effects of glyphosate exposure on community-level endpoints of sediment microorganisms (bacterial activity, fungal and total microbial biomass). Results are considered as only supportive.
251	CA 8.2.8	Bonnet et al.	2007	Assessment of the potential toxicity of herbicides and their degradation products to nontarget cells using two microorganisms, the bacteria <i>Vibrio fischeri</i> and the ciliate <i>Tetrahymena pyriformis</i> .	Environmental toxicology, (2007 Feb) Vol. 22, No. 1, pp. 78-91	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
3017	CA 8.2.8	Hernando et al.	2007	Toxicity evaluation with <i>Vibrio fischeri</i> test of organic chemicals used in aquaculture.	Chemosphere, Vol. 68, Issue 4, Page 724-730, Publication Year 2007	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
2504	CA 8.2.8	Pesce et al.	2009	Response of spring and summer riverine microbial communities following glyphosate exposure.	Ecotoxicology and environmental safety, (2009 Oct) Vol. 72, No. 7, pp. 1905-12	5.4.1 case b) relevant but supplementary information: Although at 10 µg/L no differences between treated and control were detected for chlorophyll content and biomass data (i.e. NOEC), the study does show effects in the community composition at that concentration for the higher temperature. In the treated microcosms, three algal genera (<i>Asterionella</i> , <i>Cyclotella</i> and <i>Oocystis</i>) disappeared between day 0 and day 3. Therefore, a LOEC is the only endpoint that can be established from this microcosm study and a LOEC cannot be used in the aquatic RA. Results are considered as only supportive.
875	CA 8.4	Yasmin et al.	2007	Effect of pesticides on the reproductive output of <i>Eisenia fetida</i> .	Bulletin of environmental contamination and toxicology, (2007 Nov) Vol. 79, No. 5, pp. 529-32	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
1140	CA 8.4.2	Ruan et al.	2009	Evaluation of Pesticide Toxicities with Differing Mechanisms Using <i>Caenorhabditis elegans</i> .	J. Toxicol. Environ. Health, Part A, Vol. 72, Issue 11 and 12, Page 746-751, Publication Year 2009	5.4.1 case b) relevant but supplementary information: No endpoints (NOEC, LOEC, Ecx) are provided, but some findings of the work (generation time, brood size) could serve to investigate sub-lethal effects of glyphosate on non macro-soil organisms as part of a broader discussion.
169	CA 8.5	Przybulewska	2008	An attempt to determine the	Ecol. Chem. Eng. S, Vol. 15, Issue 3,	5.4.1 case b) relevant but supplementary information: No endpoints

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
		et al.		resistance of microorganisms from triazine-contaminated soils to different herbicide groups.	Page 359-374, Publication Year 2008	are provided. Although this publication provides information about effects of high concentrations of Roundup 360 SL formulation (representative EU formulation) in soil on micro-organisms, the results are shown only in form of graphs and no detailed results are presented. Therefore the results of the study are considered only as supportive/supplementary.
3022	CP 10.2.1	Erms et al.	2009	Toxicity of glyphosate and ethoxysulfuron to the green microalgae (<i>Scenedesmus obliquus</i>).	Asian Journal of Chemistry (2009) , Vol. 21, No. 3, pp. 2163-2169	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
978	CP 10.5	Mijangos et al.	2009	Effects of glyphosate on rhizosphere soil microbial communities under two different plant compositions by cultivation-dependent and -independent methodologies	Soil biology and biochemistry (2009) , Vol. 41, No. 3, pp. 505-513	5.4.1 case b) relevant but supplementary information: The article still shows significant effects compared to the control at the lowest tested rate under some of the tested scenarios, so no clear endpoint from this study can be used for the risk assessment. In addition, glyphosate effect is not the only and single tested variable. Results are considered as only supportive.
3090		Curwin et al.	2007	Urinary pesticide concentrations among children, mothers and fathers living in farm and non-farm households in iowa.	The Annals of occupational hygiene, (2007 Jan) Vol. 51, No. 1, pp. 53-65	5.4.1 case b) relevant but supplementary information: Biomonitoring in Urine of farmer children, concentration in urine samples is only reported, likely not relevant or only supportive. Not relevant information for risk assessment but relevant for the dossier.

Table 26: Relevant but supplementary (category B) articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
174	Abass et al.	CA 5.8.2	2009	An evaluation of the cytochrome P450 inhibition potential of selected pesticides in human hepatic microsomes.	J. Environ. Sci. Health, Part B, Vol. 44, Issue 6, Page 553-563, Publication Year 2009	5.4.1 case b) relevant but supplementary information: The study provides only supplementary information on hepatic CYP interaction in vitro; results do not change the existing risk assessment.
1722	Accinelli et al.	CA 7.1.3.1	2006	Influence of CryI Ac toxin on mineralization and bioavailability of glyphosate in soil .	Journal of agricultural and food chemistry (2006) , Vol. 54, No. 1, pp. 164-169	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.
3028	Achiorno et al.	CA 8.2.4.2 CA 8.2.5.2	2008	Toxicity of the herbicide glyphosate to <i>Chordodes nobilii</i> (Gordiida, Nematomorpha).	Chemosphere, (2008 May) Vol. 71, No. 10, pp. 1816-22	5.4.1 case b) relevant but supplementary information: Data on adult mortality are not relevant, because the test was conducted with a Roundup formulation. The endpoint for larvae is based on infective capacity (of previously exposed larvae or embryos) for which significant differences compared to control were demonstrated at all tested concentrations. Therefore, a LOEC is the only endpoint that can be established from this study and a LOEC cannot be used in the aquatic RA. Results are considered as only supportive.
2671	Al-Rajab et al.	CA 7.1.3.1	2008	Sorption and leaching of 14 C- glyphosate in agricultural soils	Agronomy for Sustainable Development (Jul 2008) Vol. 28, No. 3, pp. 419-428	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. However, details in the method description are unclear (especially equilibration time). Study has some deficiencies and results are not presented in details. Additionally, no parental mass balance was established. Thus, endpoints cannot be verified.
1601	Ayoola et al.	CA 8.2.1	2008	Histopathological effects of glyphosate on juvenile African catfish (<i>Clarias gariepinus</i>).	American-Eurasian Journal of Agricultural and Environmental	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
					Science (2008) , Vol. 4, No. 3, pp. 362-367	individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
3024	Ayoola et al.	CA 8.2.1 / CP 10.2.1	2008	Toxicity of glyphosate herbicide on Nile tilapia (<i>Oreochromis niloticus</i>) juvenile.	African Journal of Agricultural Research (2008) , Vol. 3, No. 12, pp. 825-834	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
297	Bolognesi et al.	CA 5.9.4.	2009	Biomonitoring of genotoxic risk in agricultural workers from five colombian regions: association to occupational exposure to glyphosate .	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 986-97	5.4.1 case b) relevant but supplementary information: This article was downgraded to Category B due to its non-reliability. This publication is considered relevant for the risk assessment of glyphosate, but as supplementary material, and as not reliable. Information necessary to classify health outcome was not collected at the individual participant level; it is not possible to assess the health outcome in relation to any exposure using the results reported in this study. Additionally, exposure classification was based on self-reported glyphosate exposure, an indirect method by which to estimate exposure status of study participants. No biological evidence is provided to support exposure classification of study participants. Misclassification of either exposure, outcome, or both is possible in this study.
251	Bonnet et al.	CA 8.2.8	2007	Assessment of the potential toxicity of herbicides and their degradation products to nontarget cells using two microorganisms , the bacteria <i>Vibrio fischeri</i> and the ciliate <i>Tetrahymena pyriformis</i> .	Environmental toxicology, (2007 Feb) Vol. 22, No. 1, pp. 78-91	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
1000	Caceres-Jensen et al.	CA 7.1.3.1	2009	Adsorption of glyphosate on variable-charge, volcanic ash-derived soils .	Journal of environmental quality, (2009 Jul-Aug) Vol. 38, No. 4, pp. 1449-57	5.4.1 case b) relevant but supplementary information: Volcanic ash soils were investigated. These are not relevant for EU but can be relevant for Japan. The experimental setup is quite well described. The study has some deficiencies and results are not presented in detail. Thus, endpoints cannot be verified.
2270	Caldas et al.	CA 5.9.4.	2008	Poisonings with pesticides in the Federal District of Brazil.	Clin. Toxicol., Vol. 46, Issue 10, Page 1058-1063, Publication Year 2008	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
108	Calvert et al.	CA 5.9.4.	2008	Acute pesticide poisoning among agricultural workers in the United States, 1998-2005.	American Journal of Industrial Medicine, (December 2008) Vol. 51, No. 12, pp. 883-898	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
1896	Candela et al.	CA 7.1.3.1	2007	Laboratory studies on glyphosate transport in soils of the Maresme area near Barcelona, Spain: Transport model parameter estimation.	Geoderma, (JUN 15 2007) Vol. 140, No. 1-2, pp. 8-16	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.
3269	Carriquiriborde et al.	CA 8.2.1	2006	Ecotoxicological studies on the pejerrey (Odontesthes bonariensis, Pisces Atherinopsidae).	Biocell, (2006) Vol. 30, No. 1, pp. 97-109	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
332	Chan et al.	CA 5.8.2	2007	Cardiovascular effects of herbicides and formulated adjuvants on isolated rat aorta and heart.	Toxicol. in Vitro, Vol. 21, Issue 4, Page 595-603, Publication Year 2007	5.4.1 case b) relevant but supplementary information: The article is relevant for the risk assessment since it analyses the effects on cardiovascular cells exposed to glyphosate technical grade. Although only additional information is provided for the risk assessment.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
1238	Chen et al.	CA 7.2.1.2	2007	Fe(III)-pyruvate and Fe(III)-citrate induced photodegradation of Glyphosate in aqueous solutions	Journal of Coordination Chemistry, (2007) Vol. 60, No. 22, pp. 2431-2439	5.4.1 case b) relevant but supplementary information: The article shows that glyphosate is stable to photolysis at wavelengths ≥ 365 nm. According to the guideline, waverlength ≥ 290 nm should be investigated.
3090	Curwin et al.		2007	Urinary pesticide concentrations among children, mothers and fathers living in farm and non-farm households in iowa.	The Annals of occupational hygiene, (2007 Jan) Vol. 51, No. 1, pp. 53-65	5.4.1 case b) relevant but supplementary information: Biomonitoring in Urine of farmer children, concentration in urine samples is only reported, likely not relevant or only supportive. Not relevant information for risk assessment but relevant for the dossier.
2198	Dasgupta et al.	CA 5.9.4.	2007	Pesticide poisoning of farm workers-implications of blood test results from Vietnam.	Int. J. Hyg. Environ. Health, Vol. 210, Issue 2, Page 121-132, Publication Year 2007	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
197	Dominguez-Cortinas et al.	CA 8.2.4.1 CA 8.2.4.2	2008	Analysis of the toxicity of glyphosate and Faena (R) using the freshwater invertebrates <i>Daphnia magna</i> and <i>Lecane quadridentata</i> .	Toxicological and Environmental Chemistry, (2008) Vol. 90, No. 2, pp. 377-384	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
3022	Erms et al.	CP 10.2.1	2009	Toxicity of glyphosate and ethoxysulfuron to the green microalgae (<i>Scenedesmus obliquus</i>).	Asian Journal of Chemistry (2009) , Vol. 21, No. 3, pp. 2163-2169	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
1576	Farenhorst et al.	CA 7.1.3.1	2008	Herbicide sorption coefficients in relation to soil properties and terrain attributes on a cultivated prairie.	Journal of environmental quality, (2008 May-Jun) Vol. 37, No. 3, pp. 1201-8	5.4.1 case b) relevant but supplementary information: The article investigated the adsorption of glyphosate on soil. 287 surface soils (0–15 cm) collected in a 10 × 10 m grid across a heavily eroded, undulating, calcareous prairie landscape in Minnesota (U.S.). Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						verified. Adsorption coefficients are only presented a mean values for respective slopes of the sampling location. The study is considered not reliable.
3130	Farenhorst et al.	CA 7.1.3.1	2009	Variations in soil properties and herbicide sorption coefficients with depth in relation to PRZM (pesticide root zone model) calculations	Geoderma (2009) , Vol. 150, No. 3-4, pp. 267-277 Source Note: 2009 May 15, v. 150, issue 3-4	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Additionally, no parental mass balance was established. Thus, endpoints cannot be verified.
377	Firth et al.	CA 5.9.4.	2007	Chemical exposure among NZ farmers.	International journal of environmental health research, (2007 Feb) Vol. 17, No. 1, pp. 33-43	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
2174	Gjettermann et al.	CA 7.1.3.1.1 CA 7.1.3.1.2	2009	Particle-facilitated pesticide leaching from differently structured soil monoliths.	Journal of environmental quality, (2009 Nov-Dec) Vol. 38, No. 6, pp. 2382-93	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described, however several details are not reported (e.g. which phase was analysed). Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.
2026	Grundmann et al.	CA 7.1.4.2	2008	Mineralization and Transfer Processes of 14C-labeled Pesticides in Outdoor Lysimeters	Water, air and soil pollution. Focus (2008) , Vol. 8, No. 2, pp. 177-185	5.4.1 case b) relevant but supplementary information: The study has several deficiencies. Furthermore, experimental set-up and analytical results are not described in detail.
3017	Hernando et al.	CA 8.2.8	2007	Toxicity evaluation with <i>Vibrio fischeri</i> test of organic chemicals used in aquaculture.	Chemosphere, Vol. 68, Issue 4, Page 724-730, Publication Year 2007	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
155	Hokanson et al.	CA 5.8.3	2007	Alteration of estrogen-regulated gene expression in human cells induced by the agricultural and horticultural herbicide glyphosate .	Human and experimental toxicology, (2007 Sep) Vol. 26, No. 9, pp. 747-52	5.4.1 case b) relevant but supplementary information: The toxicity of glyphosate product (15%) was examined as a function of its capacity to alter gene expression (29 up and down regulated genes) in the presence or absence of estrogen. Temporal altered gene expression is not a biomarker for toxicity, but rather, may be within the range of normal biological responses of homeostasis. In vitro cytotoxicity of surfactants, however, is a significant confounder in data interpretation. Data do not reflect real in vivo exposure situations, and therefore only provides supporting information for human risk assessment purposes.
2208	Horiuchi et al.	CA 5.9.4.	2008	Pesticide-related dermatitis in Saku district, Japan, 1975-2000.	International journal of occupational and environmental health, (2008 Jan-Mar) Vol. 14, No. 1, pp. 25-34	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
598	Hultberg et al.	CA 5.8.2	2007	Cysteine turnover in human cell lines is influenced by glyphosate .	Environmental Toxicology and Pharmacology, (JUL 2007) Vol. 24, No. 1, pp. 19-22	5.4.1 case b) relevant but supplementary information: The article is providing only supplementary information for the risk assessment regarding the effect of Glyphosate to intra and extra cellular cysteine and glutathione levels.
3128	Jacobsen et al.	CA 7.1.3.1	2008	Variation of MCPA, metribuzine, methyltriazine-amine and glyphosate degradation, sorption, mineralization and leaching in different soil horizons.	Environ. Pollut. (Oxford, U. K.), Vol. 156, Issue 3, Page 794-802, Publication Year 2008	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Experiments were performed at 10°C and only one concentration was used. Additionally, no parental mass balance was established.
1010	Laitinen et al.	CA 7.1.3.1	2008	Effects of soil phosphorus status on environmental risk assessment of glyphosate and glufosinate-ammonium.	J. Environ. Qual., Volume 37, Issue 3, Page 830-838, Publication Year 2008	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described, however several details are not reported (e.g. which phase was analysed). Study has some deficiencies and results are not presented in details. Thus, endpoints

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						cannot be verified. Additionally, no parental mass balance was established.
1442	Laitinen et al.	CA 7.1.4.3	2009	Glyphosate and phosphorus leaching and residues in boreal sandy soil	PLANT AND SOIL, (OCT 2009) Vol. 323, No. 1-2, Sp. iss. SI, pp. 267-283	5.4.1 case b) relevant but supplementary information: The study does not represent worst case condition. The study period was dry in the whole Southern and Central Finland causing exceptionally low groundwater table levels and droughts in spring 2003. During the whole study the total precipitation was 867 mm in the experimental field, representing 80% of the long-term precipitation. Furthermore, the leaching field was situated in an intensively cultivated region, where the use of glyphosate is common.
623	Mamy et al.	CA 7.1.2 CA 7.1.3.1	2007	Desorption and time-dependent sorption of herbicides in soils	European journal of soil science (2007) , Vol. 58, No. 1, pp. 174-187	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method are quite well described. The study has some deficiencies and results are not presented in detail. Thus, endpoints cannot be verified.
1336	Manas et al.	CA 5.8.1	2009	Genotoxicity of AMPA, the environmental metabolite of glyphosate , assessed by the Comet assay and cytogenetic tests.	Ecotoxicology and environmental safety, (2009 Mar) Vol. 72, No. 3, pp. 834-7	5.4.1 case b) relevant but supplementary information: The publication is providing genotoxicity information on AMPA via in vitro Comet assay in Hep-2, chromosome aberration test in human lymphocytes and in vivo micronucleus test in mice. The article was downgraded to Category B due to its non-reliability.
1296	McLaughlin et al.	CA 5.8.2	2008	Functional expression and comparative characterization of nine murine cytochromes P 450 by fluorescent inhibition screening	Drug Metabolism and Disposition, (2008) Vol. 36, No. 7, pp. 1322-1331	5.4.1 case b) relevant but supplementary information: The data presented in this study provide only supportive information for the risk assessment regarding potential interaction of glyphosate with mouse and human P450s involved in xenobiotic metabolism.
1119	Melnichuk et al.	CA 8.2.4.1 CA 8.2.4.2	2007	Estimation of toxicity of glyphosate - based herbicides by biotesting method using Cladocera.	Hydrobiological Journal, (2007) Vol. 43, No. 3, pp. 80-91	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
939	Melnichuk et al.	CA 8.2.4.2 CA 8.2.5.2	2007	Effects of Fakel herbicide on vital activity of Ceriodaphnia affinis in acute and chronic experiments.	Hydrobiological Journal, (2007) Vol. 43, No. 6, pp. 83-91	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
978	Mijangos et al.	CP 10.5	2009	Effects of glyphosate on rhizosphere soil microbial communities under two different plant compositions by cultivation-dependent and -independent methodologies	Soil biology and biochemistry (2009) , Vol. 41, No. 3, pp. 505-513	5.4.1 case b) relevant but supplementary information: The article still shows significant effects compared to the control at the lowest tested rate under some of the tested scenarios, so no clear endpoint from this study can be used for the risk assessment. In addition, glyphosate effect is not the only and single tested variable. Results are considered as only supportive.
136	Naidoo et al.	CA 5.9.4.	2008	Agricultural activities, pesticide use and occupational hazards among women working in small scale farming in Northern KwaZulu-Natal, South Africa.	Int. J. Occup. Environ. Health, Vol. 14, Issue 3, Page 218-224, Publication Year 2008	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
698	Nielsen et al.	CA 8.2.7	2007	Direct and indirect effects of the herbicides Glyphosate , Bentazone and MCPA on eelgrass (Zostera marina).	Aquatic toxicology (Amsterdam, Netherlands), (2007 Apr 20) Vol. 82, No. 1, pp. 47-54	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
2945	Papchenkova et al.	CA 8.2.5.1	2009	The parameters of reproduction , sizes, and activities of hydrolases in Daphnia magna straus of successive generations affected by Roundup herbicide.	Inland Water Biology, (JUL 2009) Vol. 2, No. 3, pp. 286-291	5.4.1 case b) relevant but supplementary information: The article shows significant effects compared to the control for some variables and no effects for some other, so no clear

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						endpoint from this study can be used for the risk assessment. Results are considered as only supportive.
2504	Pesce et al.	CA 8.2.8	2009	Response of spring and summer riverine microbial communities following glyphosate exposure .	Ecotoxicology and environmental safety, (2009 Oct) Vol. 72, No. 7, pp. 1905-12	5.4.1 case b) relevant but supplementary information: Although at 10 µg/L no differences between treated and control were detected for chlorophyl content and biomass data (i.e. NOEC), the study does show effects in the community composition at that concentration for the higher temperature. In the treated microcosms, three algal genera (Asterionella, Cyclotella and Oocystis) disappeared between day 0 and day 3. Therefore, a LOEC is the only endpoint that can be established from this microcosm study and a LOEC cannot be used in the aquatic RA. Results are considered as only supportive.
644	Popp et al.	CA 7.5	2008	Determination of glyphosate and AMPA in surface and waste water using high-performance ion chromatography coupled to inductively coupled plasma dynamic reaction cell mass spectrometry (HPIC-ICP-DRC-MS)	Analytical and bioanalytical chemistry (2008) , Vol. 391, No. 2, pp. 695-699	5.4.1 case b) relevant but supplementary information: Details on sampling like exact location, timing, duration and sampling method are not available. Therefore, results cannot be related to the application schedule of glyphosate. Furthermore, available information on the analytical method and its validation does not allow for a full assessment of its acceptability.
169	Przybulewska et al.	CA 8.5	2008	An attempt to determine the resistance of microorganisms from triazine-contaminated soils to different herbicide groups.	Ecol. Chem. Eng. S, Vol. 15, Issue 3, Page 359-374, Publication Year 2008	5.4.1 case b) relevant but supplementary information: No endpoints are provided. Although this publication provides information about effects of high concentrations of Roundup 360 SL formulation (representative EU formulation) in soil on micro-organisms, the results are shown only in form of graphs and no detailed results are presented. Therefore the results of the study are considered only as supportive/supplementary.
996	Quassinti et al.	CA 8.1.5	2009	Effects of paraquat and glyphosate on steroidogenesis in gonads of the frog <i>Rana esculenta</i> in vitro	Pesticide biochemistry and physiology (2009) , Vol. 93, No. 2, pp. 91-95	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						can only be considered as supplementary information that cannot alter the existing risk assessment parameters.
243	Radio et al.	CA 5.7	2008	Assessment of Chemical Effects on Neurite Outgrowth in PC12 cells Using High Content Screening.	Toxicol. Sci., Vol. 105, Issue 1, Page 106-118, Publication Year 2008	5.4.1 case b) relevant but supplementary information: The data presented in this study provide only supportive information for the risk assessment regarding effect of glyphosate on outgrowth of neurites in differentiated Neuroscreen-1 cells.
3281	Recena et al.	CA 5.9.4.	2006	Pesticides exposure in Culturama, Brazil-Knowledge, attitudes, and practices	Environmental Research, (2006) Vol. 102, No. 2, pp. 230-236	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
23	Relyea	CA 8.1.4 CA 8.2.8	2009	A cocktail of contaminants: how mixtures of pesticides at low concentrations affect aquatic communities .	Oecologia, (2009 Mar) Vol. 159, No. 2, pp. 363-76	5.4.1 case b) relevant but supplementary information: Provides information on the effects of glyphosate on phytoplankton, zooplankton and periphyton and larval development of amphibians but no risk assessment relevant endpoints are presented.
751	Ruan et al.	CA 8.2.6.2	2008	Effects of acute glyphosate exposure on the growth and physiology of Nostoc sphaeroides, an edible cyanobacterium of paddy rice fields.	Acta Hydrobiologica Sinica, (JUL 2008) Vol. 32, No. 4, pp. 462-468	5.4.1 case b) relevant but supplementary information: Taking into account that the sampling dates and measured variables do not comply with guidelines, the results of the study are considered only as supportive/supplementary.
1140	Ruan et al.	CA 8.4.2	2009	Evaluation of Pesticide Toxicities with Differing Mechanisms Using Caenorhabditis elegans.	J. Toxicol. Environ. Health, Part A, Vol. 72, Issue 11 and 12, Page 746-751, Publication Year 2009	5.4.1 case b) relevant but supplementary information: No endpoints (NOEC, LOEC, Ecx) are provided, but some findings of the work (generation time, brood size) could serve to investigate sub-lethal effects of glyphosate on non macro-soil organisms as part of a broader discussion.
1006	Saka et al.	CA 6.5.3	2008	Effects of processing and cooking on the levels of pesticide residues in soybean samples.	Shokuhin Eiseigaku Zasshi, (JUN 2008) Vol. 49, No. 3, pp. 160-167.	5.4.1 case b) relevant but supplementary information: It provides the information on Pfs that can be used supportive of setting the MRLs. However, in the current Japanese MRL setting system, the MRL for soybean is set for RAC and Pfs for soy bean products are not reflected into the dietary risk assessment.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
2416	Sanin et al.	CA 5.9.4.	2009	Regional differences in time to pregnancy among fertile women from five Colombian regions with different use of glyphosate .	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 949-60	5.4.1 case b) relevant but supplementary information: This article was downgraded to Category B due to its non-reliability. This publication is considered relevant for the risk assessment of glyphosate, but as supplementary material, and as not reliable. Information necessary to classify health outcome was not collected at the individual participant level; no biological evidence is provided to support exposure classification of study participants. Misclassification of exposure is possible in this study. It is not possible to assess the health outcome in relation to exposure using the results reported in this study.
1257	Settimi et al.	CA 5.9.4.	2008	Findings from the Italian Program for Surveillance of Acute Pesticide-related Illness, 2005	Clinical Toxicology [Clin. Toxicol.], (2008)600) vol. 46, no. 5, p. 388	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome
1231	Simonsen et al.	CA 7.1.2	2008	Fate and availability of glyphosate and AMPA in agricultural soil .	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2008 Jun) Vol. 43, No. 5, pp. 365-75	5.4.1 case b) relevant but supplementary information: The experimental setup and analytical method are quite well described. The study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Tested soil was not glyphosate free.
2669	Sorensen et al.	CA 7.1.3.1	2006	Sorption , desorption and mineralisation of the herbicides glyphosate and MCPA in samples from two Danish soil and subsurface profiles.	Environmental pollution (2006) , Vol. 141, No. 1, pp. 184-194	5.4.1 case b) relevant but supplementary information: Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. One soil site was heavily used for agriculture in the past - the usage of glyphosate is likely. Thus, endpoints cannot be verified. Experiments were performed at 10°C. Additionally, no parental mass balance was established.
2418	Sudakin et al.	CA 5.9.4.	2009	Regional variation in the severity of pesticide exposure outcomes: applications of geographic information systems and spatial scan statistics	Clinical Toxicology, (2009) Vol. 47, No. 3, pp. 248-252	5.4.1 case b) relevant but supplementary information: Publication does not report any estimate of association between glyphosate exposure and any health outcome

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
2915	Turgut	CA 8.2.7 CP 10.2.1	2006	The impact of pesticides toward parrotfeather when applied at the predicted environmental concentration	Chemosphere (2006), Vol. Date 2007, 66(3), 469-473	5.4.1 case b) relevant but supplementary information: The article shows significant effects compared to the control at the only tested rate for some variables and no effects for some other, so no clear endpoint from this study can be used for the risk assessment. Results are considered as only supportive.
997	Widenfalk et al.	CA 8.2.8	2008	Effects of pesticides on community composition and activity of sediment microbes --responses at various levels of microbial community organization.	Environmental pollution (Barking, Essex : 1987), (2008 Apr) Vol. 152, No. 3, pp. 576-84	5.4.1 case b) relevant but supplementary information: Detected effects of this study are based on molecular methods that cannot be univocally integrated in the risk assessment. In addition a LOEC cannot be used in the aquatic RA. The article failed to demonstrate effects of glyphosate exposure on community-level endpoints of sediment microorganisms (bacterial activity, fungal and total microbial biomass). Results are considered as only supportive.
875	Yasmin et al.	CA 8.4	2007	Effect of pesticides on the reproductive output of <i>Eisenia fetida</i> .	Bulletin of environmental contamination and toxicology, (2007 Nov) Vol. 79, No. 5, pp. 529-32	5.4.1 case b) relevant but supplementary information: Although the study is relevant for the data requirement, important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.

Table 27: Articles of unclear relevance (category C) after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
601	CA 5.4.1	Sivikova et al.	2006	Cytogenetic effect of technical glyphosate on cultivated bovine peripheral lymphocytes.	International Journal of Hygiene and Environmental Health (2006) , Vol. 209, No. 1, pp. 15-20	5.4.1 case c) unclear relevance for the following reason: The paper is about an in vitro CA and SCE study on bovine lymphocytes exposed to a glyphosate formulation for 2h with metabolic activation and 24h and 48 h without metabolic activation. A glyphosate product (glyphosate , approximate 62% by weight) with 3
2194	CA 5.9.1	Curwin et al.	2007	Pesticide dose estimates for children of Iowa farmers and non-farmers.	Environmental research, (2007 Nov) Vol. 105, No. 3, pp. 307-15	5.4.1 case c) unclear relevance for the following reason: The study is providing only supplementary information for the risk assessment regarding biomonitoring data (urine) for children of farmers and non-farmers.
1545	CA 7.1.7	Malatesta et al.	2008	Hepatoma tissue culture (HTC) cells as a model for investigating the effects of low concentrations of herbicide on cell structure and function.	Toxicology in vitro : an international journal published in association with BIBRA, (2008 Dec) Vol. 22, No. 8, pp. 1853-60	5.4.1 case c) unclear relevance for the following reason: In vitro study with Glyphosate formulation of unknown composition investigating the effects on modifications in mitochondrial functions and transcription/splicing pathways in hepatocytes. Pure active substance was not tested.
917	CA 8.3.2	Addison et al.	2006	Effect of various pesticides on the non-target species Microctonus hyperodae, a biological control agent of Listronotus bonariensis.	Entomologia Experimentalis et Applicata (2006) Vol. 119, No. 1, pp. 71-79	5.4.1 case c) unclear relevance for the following reason: Study provides information on effects of a Roundup formulation on the parasitoid wasp Microctonus hyperodae. As the exposure situation in the test (exposure via shaking in test solution) is not comparable to the field situation (overspray or exposure to residues) and study conditions are not mentioned the relevance of the study cannot be clearly determined.
430	CP 7.1.7	Dimitrov et al.	2006	Comparative genotoxicity of the herbicides Roundup, Stomp and Reglone in plant and mammalian test systems.	Mutagenesis, (2006 Nov) Vol. 21, No. 6, pp. 375-82. Electronic Publication Date: 23 Sep 2006	5.4.1 case c) unclear relevance for the following reason: The study is providing only supplementary information for the risk assessment. Furthermore, no information on Roundup formulation (batch, adjuvants, expiration date, storage, analytics, purchaser) are given. There are uncertainties whether the test concentrations are in physiologically acceptable range (< 1mM) and the active ingredient content in oral doses is unclear.
1335	CP 7.1.7	Heydens et al.	2008	Genotoxic potential of glyphosate formulations: mode - of - action investigations.	Journal of agricultural and food chemistry, (2008 Feb 27) Vol. 56, No. 4, pp. 1517-23	5.4.1 case c) unclear relevance for the following reason: Genotox data on non-representative glyphosate formulation of unknown composition; relevance uncertain; Publication, no guideline/GLP study/mode of action study: clarifying contradictory results from other genotoxicity studies

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
1182	CP 7.1.7	Holeckova et al.	2006	Evaluation of the in vitro effect of glyphosate -based herbicide on bovine lymphocytes using chromosome painting.	Bulletin of the Veterinary Institute in Puawy (2006) , Vol. 50, No. 4, pp. 533-536	5.4.1 case c) unclear relevance for the following reason: The induction of bovine chromosome 1 aberrations was investigated in cultivated peripheral lymphocytes of cattle after an application of a glyphosate-based herbicide formulation. A glyphosate product (glyphosate , approximate 62% by weight) with 38% inert

Table 28: Articles of unclear relevance (category C) after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
917	Addison et al.	CA 8.3.2	2006	Effect of various pesticides on the non-target species <i>Microctonus hyperodae</i> , a biological control agent of <i>Listronotus bonariensis</i> .	Entomologia Experimentalis et Applicata (2006) Vol. 119, No. 1, pp. 71-79	5.4.1 case c) unclear relevance for the following reason: Study provides information on effects of a Roundup formulation on the parasitoid wasp <i>Microctonus hyperodae</i> . As the exposure situation in the test (exposure via shaking in test solution) is not comparable to the field situation (overspray or exposure to residues) and study conditions are not mentioned the relevance of the study cannot be clearly determined.
2194	Curwin et al.	CA 5.9.1	2007	Pesticide dose estimates for children of Iowa farmers and non-farmers.	Environmental research, (2007 Nov) Vol. 105, No. 3, pp. 307-15	5.4.1 case c) unclear relevance for the following reason: The study is providing only supplementary information for the risk assessment regarding biomonitoring data (urine) for children of farmers and non-farmers.
430	Dimitrov et al.	CP 7.1.7	2006	Comparative genotoxicity of the herbicides Roundup, Stomp and Reglone in plant and mammalian test systems.	Mutagenesis, (2006 Nov) Vol. 21, No. 6, pp. 375-82. Electronic Publication Date: 23 Sep 2006	5.4.1 case c) unclear relevance for the following reason: The study is providing only supplementary information for the risk assessment. Furthermore, no information on Roundup formulation (batch, adjuvants, expiration date, storage, analytics, purchaser) are given. There are uncertainties whether the test concentrations are in physiologically acceptable range (< 1mM) and the active ingredient content in oral doses is unclear.
1335	Heydens et al.	CP 7.1.7	2008	Genotoxic potential of glyphosate formulations: mode - of - action investigations.	Journal of agricultural and food chemistry, (2008 Feb 27) Vol. 56, No. 4, pp. 1517-23	5.4.1 case c) unclear relevance for the following reason: Genotox data on non-representative glyphosate formulation of unknown composition; relevance uncertain; Publication, no guideline/GLP study/mode of action study: clarifying contradictory results from other genotoxicity studies
1182	Holeckova et al.	CP 7.1.7	2006	Evaluation of the in vitro effect of glyphosate -based herbicide on bovine lymphocytes using chromosome painting.	Bulletin of the Veterinary Institute in Puawy (2006) , Vol. 50, No. 4, pp. 533-536	5.4.1 case c) unclear relevance for the following reason: The induction of bovine chromosome 1 aberrations was investigated in cultivated peripheral lymphocytes of cattle after an application of a glyphosate-based herbicide formulation. A glyphosate product (glyphosate , approximate 62% by weight) with 38% inert
1545	Malatesta et al.	CA 7.1.7	2008	Hepatoma tissue culture (HTC) cells as a model for investigating the effects of low concentrations of herbicide on cell structure and function.	Toxicology in vitro : an international journal published in association with BIBRA, (2008 Dec) Vol. 22, No. 8, pp. 1853-60	5.4.1 case c) unclear relevance for the following reason: In vitro study with Glyphosate formulation of unknown composition investigating the effects on modifications in mitochondrial functions and transcription/splicing pathways in hepatocytes. Pure active substance was not tested.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
601	Sivikova et al.	CA 5.4.1	2006	Cytogenetic effect of technical glyphosate on cultivated bovine peripheral lymphocytes.	International Journal of Hygiene and Environmental Health (2006) , Vol. 209, No. 1, pp. 15-20	5.4.1 case c) unclear relevance for the following reason: The paper is about an in vitro CA and SCE study on bovine lymphocytes exposed to a glyphosate formulation for 2h with metabolic activation and 24h and 48 h without metabolic activation. A glyphosate product (glyphosate , approximate 62% by weight) with 3

Table 29: Articles excluded after detailed assessment (i.e. not relevant): sorted by technical section (and by author)

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
2690		Hunter	2008	Spare part nightmare	Farmers Weekly. Vol. 149, no. 8, pp. 59-59. 22 Aug. 2008	Farmers Weekly is not a peer-reviewed journal. No abstract nor full text available. According to the title, it is related to spare parts, not relevant for the risk assessment.
1914	Ecotoxicology (incl. pollen/nectar residue)	Aliferis et al.	2009	Lemna minor L. as a model organism for ecotoxicological studies performing ¹ H NMR fingerprinting.	Chemosphere, (2009 Aug) Vol. 76, No. 7, pp. 967-73	This study presents findings regarding metabolics and therefore only based on cellular and molecular level that cannot be related to the risk assessment.
253	Ecotoxicology (incl. pollen/nectar residue)	Amoros et al.	2007	Assessment of toxicity of a glyphosate -based formulation using bacterial systems in lake water .	Chemosphere, (2007 May) Vol. 67, No. 11, pp. 2221-8	The Roundup formulation used in the study contains POEA surfactant which is permitted in formulated herbicidal products in the EU / Japan. Analytical verifications of the test item concentrations were conducted but no detailed results were reported. Results are reported in diagrams, but no numerical results are presented for the treatments
69	Ecotoxicology (incl. pollen/nectar residue)	Bautista	2007	A summary of acute risk of four common herbicides to birds and mammals .	U S Forest Service Pacific Northwest Research Station General Technical Report PNW-GTR, (JUN 2007) No. 694, pp. 77-82	In this publication risk assessments for birds and mammals are conducted on the basis of available endpoints from other publications. No new data for the RA is provided.
3020	Ecotoxicology (incl. pollen/nectar residue)	Bernal et al.	2009	Toxicity of formulated glyphosate (glyphos) and cosmo-flux to larval Colombian frogs 1. Laboratory acute toxicity.	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 961-5	In this article the observations were caused by a mixture of compounds (a mixture of formulated glyphosate -Glyphos- and the adjuvant Cosmo-Flux) and thus not attributable to glyphosate alone (e.g. mixture toxicity). In addition, the tested glyphosate formulation is not the representative formulation for the AIR5 dossier and thus not relevant to the EU /Japan glyphosate renewal. It probably contains the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. All tested individuals were taken from natural sources with an unknown history of previous chemical applications.
3021	Ecotoxicology (incl. pollen/nectar residue)	Bernal et al.	2009	Toxicity of formulated glyphosate (glyphos) and cosmo-flux to larval and juvenile colombian frogs 2. Field and laboratory microcosm acute toxicity .	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 966-73	In this article the observations were caused by a mixture of compounds (a mixture of formulated glyphosate -Glyphos- and the adjuvant Cosmo-Flux) and thus not attributable to glyphosate alone (e.g. mixture toxicity). In addition, the tested glyphosate formulation is not the representative formulation for the AIR5 dossier and thus not relevant to the EU /Japan glyphosate renewal. It probably contains the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. All tested individuals were taken from natural sources with an unknown history of previous chemical applications. Furthermore, this field study does not deal with EU / Japan representative uses / conditions (e.g. field locations, water properties, specific climatic conditions, etc.).

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
2205	Ecotoxicology (incl. pollen/nectar residue)	Brausch et al.	2006	Pesticide usage on the Southern High Plains and acute toxicity of four chemicals to the fairy shrimp <i>Thamnocephalus platyurus</i> (crustacea: anostraca).	Tex. J. Sci., Vol. 58, Issue 4, Page 309-324, Publication Year 2006	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.
999	Ecotoxicology (incl. pollen/nectar residue)	Bueno et al.	2008	Effects of pesticides used in soybean crops to the egg parasitoid <i>Trichogramma pretiosum</i> .	Ciencia Rural, (SEP 2008) Vol. 38, No. 6, pp. 1495-1503	This publication is dealing with formulations (Roundup Ready®, Roundup Transorb®, Roundup Original®, Gliz®) that are not the representative formulations for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. They probably contain the surfactant POEA or a similar one, which is not permitted in formulated herbicidal products in the EU / Japan?.
1646	Ecotoxicology (incl. pollen/nectar residue)	Bushaiba et al.	2006	Impact of chemical pesticides on survival and feeding rate of the woodlouse <i>Porcellio scaber</i> (Isopoda, Oniscidea) in Benghazi, Libya.	Jordan Journal of Applied Science (Natural Sciences) (2006) , Vol. 8, No. 2, pp. 43-50	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan.
775	Ecotoxicology (incl. pollen/nectar residue)	Casabe et al.	2007	Ecotoxicological assessment of the effects of glyphosate and chlorpyrifos in an Argentine soya field	Journal of soils and sediments (2007) , Vol. 7, No. 4, pp. 232-239	The field phase of this publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in soya fields under open-air conditions in Argentina). In addition, the study was conducted with a Roundup formulation (Roundup FG), probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.
1334	Ecotoxicology (incl. pollen/nectar residue)	Cavalcante et al.	2008	Genotoxic effects of Roundup on the fish <i>Prochilodus lineatus</i> .	Mutation research, (2008 Aug-Sep) Vol. 655, No. 1-2, pp. 41-6.	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the findings are only based on cellular and molecular level that cannot be related to the risk assessment.
631	Ecotoxicology (incl. pollen/nectar residue)	Cavas et al.	2007	Detection of cytogenetic and DNA damage in peripheral erythrocytes of goldfish (<i>Carassius auratus</i>) exposed to a glyphosate formulation using the micronucleus test and the comet assay.	Mutagenesis, (2007 Jul) Vol. 22, No. 4, pp. 263-8	This publication is dealing with a Roundup formulation containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the findings are based on cellular and molecular level (analysis of micronuclei and other nuclear abnormalities and a comet assay) that cannot be related to the risk assessment.
2944	Ecotoxicology (incl. pollen/nectar residue)	Cedergreen et al.	2006	The occurrence of hormesis in plants and algae .	Dose-response : a publication of International Hormesis Society, (2006 Oct 17) Vol. 5, No. 2, pp. 150-62	In this publication the frequency, magnitude and dose/concentration range of hormesis of one algal and three plant species after exposure to glyphosate and other pesticides was investigated. Therefore available dose-response curves from other publications were taken into

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
						account. As no new experimental data was generated and the findings cannot be related to the risk assessment this publication is regarded to be not relevant.
2439	Ecotoxicology (incl. pollen/nectar residue)	Cedergreen et al.	2007	Reproducibility of binary-mixture toxicity studies.	Environmental Toxicology and Chemistry (2007) , Vol. 26, No. 1, pp. 149-156	The observations presented in this study were caused by mixture of different herbicides and thus not attributable to glyphosate itself (e.g. mixture toxicity). Glyphosate alone data (EC50) were also calculated for Lemna minor, but no data/values were given, just graphical representations. For Tripleurospermum inodorum, a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan, was used. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.
1872	Ecotoxicology (incl. pollen/nectar residue)	Cedergreen et al.	2007	Is mixture toxicity measured on a biomarker indicative of what happens on a population level? A study with Lemna minor.	Ecotoxicology and Environmental Safety, (JUL 2007) Vol. 67, No. 3, pp. 323-332	The observations presented in this study were caused by mixture of different herbicides and thus not attributable to glyphosate itself (e.g. mixture toxicity). Glyphosate alone data were calculated (mean growth and mean pigment EC50 for Lemna minor), but no data/values were given, just graphical representations.
567	Ecotoxicology (incl. pollen/nectar residue)	Cericato et al.	2008	Cortisol response to acute stress in jundia Rhamdia quelen acutely exposed to sub-lethal concentrations of agrichemicals	Comparative Biochemistry and Physiology, Part C: Toxicology and Pharmacology (2008), 148C(3), 281-286	This publication is dealing with a Roundup formulation containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the findings are based on molecular level (cortisol in plasma) that cannot be related to the risk assessment.
1785	Ecotoxicology (incl. pollen/nectar residue)	Chattopadhyay et al.	2007	Influences of environmental factors and antidote addition on glyphosate toxicity to freshwater fish , Labeo rohita (Hamilton)	Chemistry and Ecology [Chem. Ecol.]. Vol. 23, no. 4, pp. 279-287. Aug 2007	This publication deals with the Glycel® formulation, containing ethoxylated tallow alkyl amines surfactant, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, most observations are addressing the effects of a mixture of potentially causal factors (pH, calcium, salinity) and thus not fully attributable to glyphosate itself. The exposure time of the fish to the fresh or aged residues of glyphosate in water is not given and the applied concentration is not clear (12.3 L a.i/ha/m).
99	Ecotoxicology (incl. pollen/nectar residue)	Comstock et al.	2007	Actual toxic effects of round-up herbicide on wood frog tadpoles (Rana sylvatica).	Journal of Freshwater Ecology, (DEC 2007) Vol. 22, No. 4, pp. 705-708	The Roundup formulation used in the study contains POEA surfactant which is permitted in formulated herbicidal products in the EU / Japan. No analytical verifications of the test item concentrations in the test media were conducted. No replicates were used for the study design and study conditions are not described (pH, temperature, oxygen content, water quality parameters, feeding)
2158	Ecotoxicology (incl. pollen/nectar residue)	Costa et al.	2008	Oxidative stress biomarkers and heart function in bullfrog tadpoles	Ecotoxicology (London, England), (2008 Apr) Vol. 17, No. 3, pp.	This publication deals with a Roundup formulation, containing the surfactant POEA (or any similar), which is

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
				exposed to Roundup Original.	153-63	not permitted in formulated herbicidal products in the EU / Japan.
3019	Ecotoxicology (incl. pollen/nectar residue)	Dinehart et al.	2009	Toxicity of a glufosinate- and several glyphosate-based herbicides to juvenile amphibians from the Southern High Plains, USA.	Sci. Total Environ., Vol. 407, Issue 3, Page 1065-1071, Publication Year 2009	This publication is dealing with Roundup formulations containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan or in a mixture together with pelargonic acid. These are not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the individuals were taken from natural sources and the specific exposure history of the populations from which animals used in this study were drawn is unknown. These amphibian populations likely experienced previous pesticide exposure because they were inhabiting wetlands surrounded by agriculture.
904	Ecotoxicology (incl. pollen/nectar residue)	Elandalloussi et al.	2008	Effect of the herbicide Roundup on <i>Perkinsus olseni</i> in vitro proliferation and in vivo survival when infecting a permissive host, the clam <i>Ruditapes decussatus</i> .	Bulletin of environmental contamination and toxicology, (2008 Jun) Vol. 80, No. 6, pp. 512-5	In this study the active substance glyphosate and a Roundup formulation containing POEA surfactant is tested. The study results determined for the active substance glyphosate are very limited, i.e. for the parasitic protozoa <i>Perkinsus olseni</i> the in vitro inhibition of growth was tested and one IC50 value without confidence intervals is presented. For the Roundup formulation and the active substance glyphosate no analytical verifications of test item concentrations were conducted. As the surfactant POEA is not permitted in formulated products in the EU/Japan the determined study results for the Roundup-formulation are not regarded relevant. The study results for the active substance glyphosate are also not regarded relevant, as no analytical verification of the test concentrations were conducted, the results are very limited and the test species and test design is not regarded adequate to assess ecotoxicological relevant endpoints for the risk assessment.
1600	Ecotoxicology (incl. pollen/nectar residue)	El-Shenawy et al.	2009	Histopathologic Biomarker Response of Clam, <i>Ruditapes decussatus</i> , to Organophosphorous Pesticides Reldan and Roundup: A Laboratory Study.	Ocean Science Journal, (MAR 2009) Vol. 44, No. 1, pp. 27-34	This publication does not provide any numerical/graphical result, just digital images of histopathological changes without any measure of these changes and no relation with related chronic toxicological effects. In addition, this publication is dealing with a Roundup formulation most probably containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan.
2627	Ecotoxicology (incl. pollen/nectar residue)	Fell et al.	2006	Short-term effects on macroinvertebrates and fishes of herbiciding and mowing <i>Phragmites australis</i> -dominated tidal marsh.	Northeastern Naturalist, (2006) Vol. 13, No. 2, pp. 191-212	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the field survey was conducted in 50 ha of marshland in US). In addition, it deals with a Rodeo formulation in combination with the aquatic surfactant Chem Surf. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. The observations are also caused by a mixture of potentially causal factors and thus not only attributable to glyphosate.

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
342	Ecotoxicology (incl. pollen/nectar residue)	Glazko et al.	2006	Change in the enzyme spectra of soil microorganisms <i>Micrococcus luteus</i> CCM 248 and <i>Stenotrophomonas maltophilia</i> UKM V-257 under the effect of certain pesticides.	Russian Agricultural Sciences (2006) , No. 5, pp. 8-12, translated from Doklady Rossiiskoi Akademii Selskokhozyaistvennykh Nauk (2006) No. 3, 27-30 (Ru)	In this literature article the effect of Roundup and other pesticides on the synthesis of enzymes in <i>M. luteus</i> CCM 248 and <i>S. maltophilia</i> UKM V-257 is examined. As the findings are based on molecular level, they cannot be related to the risk assessment.
104	Ecotoxicology (incl. pollen/nectar residue)	Gluszczak et al.	2007	Acute effects of glyphosate herbicide on metabolic and enzymatic parameters of silver catfish (<i>Rhamdia quelen</i>).	Comparative biochemistry and physiology. Toxicology and pharmacology : CBP, (2007 Nov) Vol. 146, No. 4, pp. 519-24	The Roundup formulation used in the study contains POEA surfactant which is permitted in formulated herbicidal products in the EU/Japan. In addition in the study the effects of Roundup on metabolic and enzymatic parameters of silver catfish were assessed. As the findings are only based on molecular level they cannot be related to the risk assessment.
832	Ecotoxicology (incl. pollen/nectar residue)	Gluszczak et al.	2006	Effect of glyphosate herbicide on acetylcholinesterase activity and metabolic and hematological parameters in piava (<i>Leporinus obtusidens</i>).	Ecotoxicology and Environmental Safety, (OCT 2006) Vol. 65, No. 2, pp. 237-241	In this literature article the effects of Roundup on acetylcholinesterase and hematological parameters in <i>Leporinus obtusidens</i> were assessed. As the findings are only based on molecular level they cannot be related to the risk assessment.
2996	Ecotoxicology (incl. pollen/nectar residue)	Guilherme et al.	2009	Tissue specific DNA damage in the European eel (<i>Anguilla anguilla</i>) following a short-term exposure to a glyphosate -based herbicide	Toxicology Letters [Toxicol. Lett.]. Vol. 189, S212 p. 13 Sep 2009	This abstract refers to the 46th Congress of the European Societies of Toxicology. Tissue specific DNA damage in the European eel following a short-term exposure to a glyphosate based herbicide is the topic under investigation. As no detailed information is provided and the findings are only based on molecular level, they cannot be related to the risk assessment.
2969	Ecotoxicology (incl. pollen/nectar residue)	Guiseppe	2006	The use of glyphosate herbicides in managed forest ecosystems and their effects on non-target organisms with particular reference to ants as bioindicators	(2006) , Electronic Series Title: Technical bulletin (Maine Agricultural and Forest Experiment Station) ; 192	Scientific review of existing literature.
348	Ecotoxicology (incl. pollen/nectar residue)	Gupta et al.	2009	Changes in microbial biomass and phosphatase activity exposed to 2,4-D and glyphosate	Journal of Environmental Research and Development (2009) , 3(3), 663-669	The study focuses on the effects of glyphosate on the phosphatase enzyme, biomass carbon and phosphorous in soil. These parameters are not considered relevant for the EU / Japanese risk assessment. In addition, test soils originate from cultivated land from North India and might therefore not be regarded representative for the EU/Japan.
903	Ecotoxicology (incl. pollen/nectar residue)	Jankowska et al.	2007	Effect of the herbicide ROUNDUP 360 SL on the generation time of <i>Aeromonas hydrophila</i> and <i>Pseudomonas fluorescens</i> in lake water .	Polish Journal of Natural Sciences (2007) , Vol. 22, No. 4, pp. 660-669	This publication is dealing with effects of the representative EU formulation (Roundup 360 SL) on the generation time of the aquatic bacteria <i>Aeromonas hydrophila</i> and <i>Pseudomonas fluorescens</i> . No further endpoints were assessed and no analytical verification of the test item concentrations were conducted. As the evaluated endpoint is not regarded relevant to the risk assessment, the study was considered as not relevant.
845	Ecotoxicology (incl. pollen/nectar residue)	Kamble et al.	2006	Effect of herbicide glyphosate on DNA , RNA and protein contents of seedlings of <i>Hibiscus cannabinus</i> Linn.	Biosciences Biotechnology Research Asia, (December 2006) Vol. 3, No. 2 A, pp. 431-436	This publication is dealing with effects of glyphosate on macromolecular contents (DNA, RNA and protein) of treated <i>Hibiscus</i> seedlings. As the findings are based on molecular level they cannot be related to the risk

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
						assessment.
418	Ecotoxicology (incl. pollen/nectar residue)	Kramer et al.	2008	Comments on /Evaluation of estrogenic activities of aquatic herbicides and surfactants using a rainbow trout vitellogenin assay/.	Toxicological Sciences, (June 2008) Vol. 104, No. 1, pp. 228-230	This is a letter to the editor (i.e. an opinion article about another different study), where no new data for the RA is provided.
1439	Ecotoxicology (incl. pollen/nectar residue)	Kremer et al.	2009	Glyphosate and glyphosate - resistant crop interactions with rhizosphere microorganisms	European journal of agronomy (2009) , Vol. 31, No. 3, pp. 153-161	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in open-air fields in US under local soil and climate conditions). In addition, glyphosate specifications were not indicated (no details on the used formulation). This work does not present any numerical/tabulated result, just graphical outcomes.
1826	Ecotoxicology (incl. pollen/nectar residue)	Krzysko-Lupicka et al.	2008	Interactions between glyphosate and autochthonous soil fungi surviving in aqueous solution of glyphosate .	Chemosphere, (2008 Apr) Vol. 71, No. 7, pp. 1386-91	The tested material was not identified (just that N-Phosphonomethylglycine used in this study was obtained from commercial formulation by precipitation from its aqueous solution with concentrated hydrochloric acid). In addition, the exposure route (10 grams soil samples were suspended in 90 ml of 1 mM glyphosate solution) is not clear (for how much time?) and seems to not be relevant for EU / Japan regulatory purposes.
1661	Ecotoxicology (incl. pollen/nectar residue)	Kumari et al.	2008	Impact of herbicide (glyphosate) on the biochemical components of the fish , Catla catla	Indian Journal of Environment and Ecoplanning, (2008) Vol. 15, No. 1-2, pp. 434-438	This publication deals with the Glycel® formulation, containing ethoxylated tallow alkyl amines surfactant, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, all findings of this study are based on cellular and molecular level that cannot be related to the risk assessment.
2649	Ecotoxicology (incl. pollen/nectar residue)	Lancaster et al.	2006	Soil Microbial Activity Is Affected by Roundup WeatherMax and Pesticides Applied to Cotton (Gossypium hirsutum)	Journal of agricultural and food chemistry (2006) , Vol. 54, No. 19, pp. 7221-7226, Electronic	The observations presented in this study were caused by mixture of different herbicides and thus not attributable to glyphosate itself (e.g. mixture toxicity). Glyphosate alone data were also provided (only graphically), but a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan, was used. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.
429	Ecotoxicology (incl. pollen/nectar residue)	Lee et al.	2009	Comparative effects of the formulation of glyphosate - surfactant herbicides on hemodynamics in swine.	Clinical toxicology (Philadelphia, Pa.), (2009 Aug) Vol. 47, No. 7, pp. 651-8.	Reported results on hemodynamics and death in piglets are according to the publication depending on surfactants (including POEA) and thus not relevant for the risk assessment.
2656	Ecotoxicology (incl. pollen/nectar residue)	Lupwayi et al.	2007	Soil microbial biomass, functional diversity and enzyme activity in glyphosate - resistant wheat-canola rotations under low-disturbance direct seeding and conventional tillage	Soil biology and biochemistry (2007) , Vol. 39, No. 7, pp. 1418-1427	This publication focuses on genetically modified organisms / transgenic crops; no data are directly relevant to glyphosate evaluation. This field study was conducted at six sites on the Canadian prairies and therefore is not dealing with EU / Japan representative uses / conditions (e.g. field locations, soil properties, etc.). Furthermore, the glyphosate

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
						formulation used in this study was not identified (just the application rate) and was mixed with other chemicals and thus the observations are not attributable to glyphosate.
2658	Ecotoxicology (incl. pollen/nectar residue)	Lupwayi et al.	2009	Soil microbial response to herbicides applied to glyphosate - resistant canola	Agriculture, ecosystems and environment (2009) , Vol. 129, No. 1-3, pp. 171-176	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the field survey was conducted on different sites in Canada). In addition, it deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. Some of the treatments are also caused by a mixture of potentially causal factors / chemicals and thus not only attributable to glyphosate. No comparison to control is possible, because there was no control treatment without herbicide application. The study was conducted to compare a glyphosate-resistant canola system with alternative herbicides.
1935	Ecotoxicology (incl. pollen/nectar residue)	Lushchak et al.	2009	Low toxic herbicide Roundup induces mild oxidative stress in goldfish tissues.	Chemosphere, (2009 Aug) Vol. 76, No. 7, pp. 932-7	The glyphosate tested substance in this study is a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. The Roundup formulation is not known. The effects were assessed only at cellular and molecular level that cannot be related to the risk assessment.
109	Ecotoxicology (incl. pollen/nectar residue)	Mccomb et al.	2008	Acute toxic hazard evaluations of glyphosate herbicide on terrestrial vertebrates of the Oregon coast range.	Environmental science and pollution research international, (2008 May) Vol. 15, No. 3, pp. 266-72.	Non relevant route of exposure (i.p.) for mammals.
1612	Ecotoxicology (incl. pollen/nectar residue)	Michalkova et al.	2009	How glyphosate altered the behaviour of agrobiont spiders (Araneae: Lycosidae) and beetles (Coleoptera: Carabidae)	Biological control : theory and application in pest management (2009) , Vol. 51, No. 3, pp. 444-449	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU/Japan glyphosate renewal. In addition, the study design, test system and exposure routes are not relevant for the EU / Japan regulatory purposes. Tested rate is not clear.
975	Ecotoxicology (incl. pollen/nectar residue)	Nakamura et al.	2008	Effects of glyphosate herbicide on soil and litter macro-arthropods in rainforest: Implications for forest restoration	Ecological management and restoration (2008) , Vol. 9, No. 2, pp. 126-133	This publication is dealing with a "Roundup" formulation (Roundup® Bioactive) probably containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, this field study is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in rainforest fields under open-air conditions in Australia).
1602	Ecotoxicology (incl. pollen/nectar residue)	Olurin et al.	2006	Histopathological responses of the gill and liver tissues of Clarias gariepinus fingerlings to the herbicide, glyphosate .	African Journal of Biotechnology, (DEC 18 2006) Vol. 5, No. 24, pp. 2480-2487	This publication does not provide any numerical/graphical result, just digital images of histopathological changes without any measure of these changes and no relation with related chronic toxicological effects. In addition, this

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
						publication does not identify the tested formulation.
755	Ecotoxicology (incl. pollen/nectar residue)	Pelosi et al.	2009	Earthworm community in conventional, organic and direct seeding with living mulch cropping systems.	Agron. Sustainable Dev., Vol. 29, Issue 2, Page 287-295, Publication Year 2009	In this field study comparing different cropping systems for 3 years, the observations in the glyphosate treated plots are caused by a mixture of other compounds/potentially causal factors and thus not attributable to glyphosate itself. In addition, glyphosate specifications and application details and rate were not indicated.
971	Ecotoxicology (incl. pollen/nectar residue)	Pereira et al.	2008	Effects of glyphosate and endosulfan on soil microorganisms in soybean crop .	Planta Daninha (2008) , Vol. 26, No. 4, pp. 825-830	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in open-air field plots in Brazil under local soil and climate conditions). In addition, it only focuses on microbial respiration (CO2 acumulation), which is no longer a variable to consider for the EU / Japan risk assessment
1018	Ecotoxicology (incl. pollen/nectar residue)	Perez et al.	2007	Effects of the herbicide Roundup on freshwater microbial communities : a mesocosm study.	Ecological applications : a publication of the Ecological Society of America, (2007 Dec) Vol. 17, No. 8, pp. 2310-22	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in earthen ponds under open-air conditions in Argentina). In addition, it deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan?. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.
3225	Ecotoxicology (incl. pollen/nectar residue)	Quaranta et al.	2009	Why amphibians are more sensitive than mammals to xenobiotics.	PloS one, (2009 Nov 04) Vol. 4, No. 11, pp. e7699. Electronic Publication Date: 4 Nov 2009	Findings of this publication, related to the permeability of frogs and pigs skin to different chemicals including glyphosate are not related to ecotoxicology. In this article glyphosate was not the focus of the study (it deals with general pesticide exposure) and its study design and test system are not relevant for ecotoxicological regulatory purposes
349	Ecotoxicology (incl. pollen/nectar residue)	Ratcliff et al.	2006	Changes in microbial community structure following herbicide (glyphosate) additions to forest soils	Applied soil ecology (2006) , Vol. 34, No. 2-3, pp. 114-124	This study on the effects of glyphosate on the structure of the microbial community in soil is not dealing with EU / Japan representative uses / conditions (e.g. soil was collected from two different ponderosa pine plantations in northern California). In addition, it deals with a Roundup formulation, probably containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.
2966	Ecotoxicology (incl. pollen/nectar residue)	Relyea et al.	2009	The toxicity of Roundup Original Max to 13 species of larval amphibians .	Environmental toxicology and chemistry, (2009 Sep) Vol. 28, No. 9, pp. 2004-8	The Roundup Original Max® formulation used in the study probably contains POEA surfactant (or any similar) which is not permitted in formulated herbicidal products in the EU / Japan. In addition no analytical verification of the test item concentration in the test media was conducted.
1654	Ecotoxicology (incl. pollen/nectar residue)	Riaz et al.	2009	Impact of glyphosate and benzo[a]pyrene on the tolerance of mosquito larvae to chemical	Aquat. Toxicol., Vol. 93, Issue 1, Page 61-69, Publication Year 2009	This study investigates the tolerance of mosquito larvae to several insecticides, having been exposed previously to sub-lethal concentrations of glyphosate. The glyphosate tested

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
				insecticides. Role of detoxification genes in response to xenobiotics.		substance is Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. The direct glyphosate effects on mosquitos conferring increased tolerance to insecticides were assessed only at cellular and molecular level that cannot be related to the risk assessment.
2073	Ecotoxicology (incl. pollen/nectar residue)	Rochfort et al.	2009	NMR-based metabolomics using earthworms as potential indicators for soil health	METABOLOMICS, (MAR 2009) Vol. 5, No. 1, pp. 95-107	This study presents findings regarding metabolomics and therefore only based on cellular and molecular level that cannot be related to the risk assessment. In addition, the tested material comes from different sites in Australia and therefore not dealing with EU / Japan representative uses / conditions (e.g. field locations, soil properties, etc.). Furthermore, the test item was Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan, and the observations are caused by mixture of compounds / potentially causal factors and thus not attributable to only glyphosate.
1054	Ecotoxicology (incl. pollen/nectar residue)	Saradhamani et al.	2009	Efficacy of herbicide Glyphosate on oxygen consumption of a fresh water fish , Catla catla	Indian Journal of Environment and Ecoplanning (2009), 16(1), 239-243	In this study, assessing the effects of glyphosate exposure on the rate of fish oxygen consumption after 96 hours, the test design and system are not relevant for the EU / Japan regulatory purposes. In addition, the test item was not identified as it was just indicated that it is glyphosate without further content/purity/source indication (it could be a formulation not relevant to the EU / Japan glyphosate renewal). Furthermore, the study seems to be not reliable at all, as shows several inconsistencies in the reported results' table (percent change in the rate of oxygen consumption at 72 h, significant difference detected for the 0.35 ppm concentration at 72 h, etc.) and text. The statistical analysis was not described and it is not possible to determine if it has been conducted or not.
1620	Ecotoxicology (incl. pollen/nectar residue)	Solomon et al.	2009	Human health and environmental risks from the use of glyphosate formulations to control the production of coca in Colombia: overview and conclusions.	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 914-20. Ref: 50	This is a scientific review article where no new data, just secondary information, is provided that can be used for risk assessment. In addition, most of the effects reported in this review were caused by mixture of compounds / potentially causal factors and thus not attributable to glyphosate itself.
397	Ecotoxicology (incl. pollen/nectar residue)	Soso et al.	2007	Chronic exposure to sub-lethal concentration of a glyphosate -based herbicide alters hormone profiles and affects reproduction of female Jundia (Rhamdia quelen).	Environmental Toxicology and Pharmacology, (MAY 2007) Vol. 23, No. 3, pp. 308-313	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in earthen ponds under open-air conditions in Brazil). In addition, it deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.
3023	Ecotoxicology (incl. pollen/nectar residue)	Sparling et al.	2006	Toxicity of glyphosate as Glypro and LI700 to red-eared slider (trachemys	Environmental toxicology and chemistry, (2006 Oct) Vol. 25, No.	This study presents observations caused by mixture of compounds (the glyphosate formaltion Glypro and a 3%

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
				scripta elegans) embryos and early hatchlings.	10, pp. 2768-74	solution of the surfactant LI700) and thus not attributable to only glyphosate.
1642	Ecotoxicology (incl. pollen/nectar residue)	Stachowski-Haberkorn et al.	2008	Impact of Roundup on the marine microbial community , as shown by an in situ microcosm experiment.	Aquatic toxicology (Amsterdam, Netherlands), (2008 Sep 29) Vol. 89, No. 4, pp. 232-41	This publication deals with a Roundup formulation, containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan.
2914	Ecotoxicology (incl. pollen/nectar residue)	Thompson et al.	2005	The impact of insecticides and herbicides on the biodiversity and productivity of aquatic communities.	Ecological applications : a publication of the Ecological Society of America (2006) , Vol. 16, No. 5, pp. 2022-2027	This publication deals with a Roundup formulation, containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the study design and test system is not fully relevant for regulatory purposes (All tested organisms included in these aquatic mesocosms were brought to the laboratory from natural unidentified sources and distributed into the different aquaria). Year of publication is 2005.
347	Ecotoxicology (incl. pollen/nectar residue)	Tierney et al.	2006	Changes in juvenile coho salmon electro-olfactogram during and after short-term exposure to current-use pesticides.	Environmental toxicology and chemistry, (2006 Oct) Vol. 25, No. 10, pp. 2809-17	In this literature article the effect of glyphosate and other pesticides on the olfaction of juvenile coho-salmons is examined. The assessed study endpoint is not regarded relevant for the EU / Japanese risk assessment.
2423	Ecotoxicology (incl. pollen/nectar residue)	Tierney et al.	2007	Relating olfactory neurotoxicity to altered olfactory-mediated behaviors in rainbow trout exposed to three currently-used pesticides.	Aquatic toxicology (Amsterdam, Netherlands), (2007 Feb 15) Vol. 81, No. 1, pp. 55-64	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the study design and test system (focused on olfactory-mediated behavioral effects) are not relevant for regulatory purposes.
1754	Ecotoxicology (incl. pollen/nectar residue)	Tsui et al.	2006	Influence of glyphosate and its formulation (Roundup super([registered])) on the toxicity and bioavailability of metals to Ceriodaphnia dubia	Environmental Pollution. Vol. 140, no. 2, pp. 59-68. Mar. 2006	In this study, the observations related with glyphosate (IPA salt) were caused by mixture of compounds (metal acute toxicity and accumulation on aquatic invertebrates when previously treated with glyphosate) and thus not attributable to glyphosate itself (e.g. mixture toxicity). The 48-h LC50 was calculated however for Roundup® and therefore dealing with a formulation containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.
1095	Ecotoxicology (incl. pollen/nectar residue)	Watson et al.	2008	Environmental influences on Acinetobacter sp. strain BD413 transformation in soil	Biology and fertility of soils (2008) , Vol. 45, No. 1, pp. 83-92	In this literature article the effects of Roundup Ready Renew on Acinetobacter sp. strain BD413 transformation in soil were assessed. As the findings are only based on molecular level they cannot be related to the risk assessment.
979	Ecotoxicology (incl. pollen/nectar residue)	Weaver et al.	2007	Effects of glyphosate on soil microbial communities and its mineralization in a Mississippi soil .	Pest management science, (2007 Apr) Vol. 63, No. 4, pp. 388-93	This study consists of two different tests, one field study in USA not dealing with EU / Japan representative uses/conditions (e.g. field locations, soil properties, non-EU monitoring etc.) and one laboratory study with a study

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
						design and system that are not relevant for regulatory purposes. Only C-related (and not N-related) mineralization was measured, which is no longer relevant for the risk assessment.
447	Ecotoxicology (incl. pollen/nectar residue)	Whiteside et al.	2008	Comparison of a score-based approach with risk-based ranking of in-use agricultural pesticides in Canada to aquatic receptors.	Integr. Environ. Assess. Manage., Vol. 4, Issue 2, Page 215-236, Publication Year 2008	This article, presenting a new risk-based approach for ranking pesticides and their potential risk to aquatic life, only contains secondary ecotoxicological information from several sources: The Pesticide Manual of the British Crop Protection Council, USEPA pesticide registration data, the French AGRITOX, European Commission pesticide review reports, and the USEPA ECOTOX database. It does not present any new toxicity data. In addition, this publication deals with general pesticide exposures (not glyphosate specific).
2020	Ecotoxicology (incl. pollen/nectar residue)	Zabaloy et al.	2008	Microbial respiration in soils of the Argentine pampas after metsulfuron methyl, 2,4-D, and glyphosate treatments.	Communications in soil science and plant analysis (2008) , Vol. 39, No. 3-4, pp. 370-385	This publication does not deal with EU / Japan representative uses / conditions (e.g. Argentinian field locations with specific soil properties, etc.). In addition, the study focuses on the effects on microbial respiration (CO2 release) and this is not a data requirement according to EU Regulation 283/2013 anymore. Furthermore, the test item was not fully identified and the test soil had a previous history of pesticide applications that could have altered the diversity and levels of the microbial community.
179	Ecotoxicology (incl. pollen/nectar residue)	Zabaloy et al.	2008	An integrated approach to evaluate the impacts of the herbicides glyphosate, 2,4-D and metsulfuron-methyl on soil microbial communities in the Pampas region, Argentina	Applied soil ecology (2008) , Vol. 40, No. 1, pp. 1-12	This publication is not considered relevant as the used test soils have a reported history of herbicide application. In addition, they originate from agricultural fields of the Pampas region (Argentina) and might therefore not be regarded representative for the EU/Japan.
839	Ecotoxicology (incl. pollen/nectar residue)	Zahra et al.	2006	Effect of glyphosate on various blood parameters of fresh water fishes , Heteropneustes fossilis.	Flora and Fauna (Jhansi) (2006) , Vol. 12, No. 1, pp. 100-104	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. In addition, no analytical verification of the test item concentrations in the tested tap water was conducted and the origin/source of the tested fishes is not clear either.
2930	Ecotoxicology (incl. pollen/nectar residue)	Zhidenko et al.	2007	The influence of roundup on the dynamics of histological changes in organs of carps.	Hydrobiological Journal, (2007) Vol. 43, No. 2, pp. 93-99	This publication does provide histological changes after exposure to a Roundup formulation at 0.004 mg/L; no numerical/graphical results are provided. The description of the study design is very limited, the test conditions are poorly described and the effects cannot be related to the risk assessment. Therefore this study is not regarded relevant.
746	Ecotoxicology (incl. pollen/nectar residue)	Zhydenko	2008	Dynamics of the juvenile carps hematological parameters under the impact of herbicides.	Hydrobiological Journal, (2008) Vol. 44, No. 5, pp. 73-80	This publication is dealing with a "Roundup" formulation (no indication of which one) probably containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition,

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
						the findings are all based on cellular and molecular level (changes of the hematological parameters) that cannot be related to the risk assessment.
1092	Ecotoxicology (incl. pollen/nectar residue)/ E-fate	Tsui et al.	2008	Environmental fate and non-target impact of glyphosate -based herbicide (Roundup) in a subtropical wetland.	Chemosphere, (2008 Mar) Vol. 71, No. 3, pp. 439-46. Electronic Publication Date: 26 Dec 2007	The Roundup formulation used in the study contains POEA surfactant which is not permitted in formulated herbicidal products in the EU / Japan. The ecotoxicologically relevant findings of this field study (in situ bioassay of fish in a freshwater & estuarine pond) cannot clearly be related to the application of the Roundup formulation as a very open test design was chosen and test species might be exposed to multiple chemicals/stressors. Environmental fate in a subtropical wetland can for various reasons not readily transferred to agricultural conditions considered relevant.
2830	E-fate	Adams et al.	2007	The Absence of Glyphosate Residues in Wet Soil and the Adjacent Watercourse after a Forestry Application in New Brunswick.	Northern journal of applied forestry (2007) , Vol. 24, No. 3, pp. 230-232	Study design is not relevant for the European regulatory purposes and no relevant endpoint was determined. Glyphosate product was applied at a field site in Canada and a water stream and water saturated soil was analysed.
807	E-fate	Adil et al.	2009	Effect of agricultural chemicals on aquatic ecosystem in Guyana	Global Journal of Environmental Research, (2009) Vol. 3, No. 1, pp. 22-25. CODEN: GJERAW.	Publication is reporting on water monitoring under Non-EU conditions which are not relevant for the environmental risk assessments. Detected residues in algae are considered to be not relevant for the dietary risk assessment as it is neither clear these algal species are suitable for human consumption or ever harvested for human consumption, also residues cannot be attributed to a GAP relevant for EU and might be caused by misuse or accidental spillage unclear exposure.
743	E-fate	Alexa et al.	2009	Dynamic of glyphosate mineralization in different soil types.	Romanian Agricultural Research (2009) , No. 26, pp. 57-60	Study design not relevant for the European regulatory purposes. Different soils from Romania were incubated with glyphosate for 40 days. Only the evolved CO2 was measured. No endpoints can be derived.
2219	E-fate	Barrett et al.	2007	Phosphate and glyphosate mobility in soil columns amended with roundup	Soil science (2007) , Vol. 172, No. 1, pp. 17-26	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. It was investigated whether moderately low glyphosate application rates could mobilize significant PO43- in coarse-textured soils. No endpoints for risk assessment are generated.
2641	E-fate	Bazot et al.	2008	Simultaneous mineralization of glyphosate and diuron by a consortium of three bacteria as free- and/or immobilized-cells formulations.	Applied microbiology and biotechnology, (2008 Jan) Vol. 77, No. 6, pp. 1351-8	Study design is not relevant for the European regulatory purposes. Three isolated bacteria strains were assessed to study the simultaneous mineralisation of glyphosate and diuron.
703	E-fate	Bhaskara et al.	2006	Direct sensitive spectrophotometric determination of glyphosate by using ninhydrin as a chromogenic reagent in formulations and environmental water samples.	Helvetica Chimica Acta (2006) , Vol. 89, No. 11, pp. 2686-2693	Publication dealing with analytical methods / development. Method validation was performed with field water sampled from irrigated land in India.
2189	E-fate	Carpenter et al.	2008	Pesticide Occurrence and Distribution in the Lower Clackamas River Basin, Oregon, 2000-2005	Scientific Investigations Report. U.S. Geological Survey. no. 2008-5027, 99 pp. 2008	Publication not dealing with EU representative uses / conditions (non-EU monitoring).

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
2230	E-fate	Chen et al.	2007	Photodegradation of glyphosate in the ferrioxalate system.	Journal of hazardous materials, (2007 Sep 05) Vol. 148, No. 1-2, pp. 360-5	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. Wavelength of the used lamp was > 365 nm and the focus of the article was the photodegradation in a ferrioxalate system.
3145	E-fate	Choquette et al.	2009	Water Quality and Evaluation of Pesticides in Lakes in the Ridge Citrus Region of Central Florida	Scientific Investigations Report. U.S. Geological Survey. no. 2008-5178, 55 pp. 2009	Publication not dealing with Japan/EU representative uses / conditions (non-EU monitoring).
2216	E-fate	Comoretto et al.	2007	Pesticides in the Rhone river delta (France): Basic data for a field-based exposure assessment .	Science of the Total Environment, (JUL 15 2007) Vol. 380, No. 1-3, Sp. Iss. SI, pp. 124-132	Publication where glyphosate or a relevant metabolite were not the focus of the publication.
126	E-fate	Da et al.	2007	Adsorption of glyphosate on clays and soils from Parana state: Effect of pH and phosphate competitive adsorption of phosphate .	Brazilian Archives of Biology and Technology, (MAY 2007) Vol. 50, No. 3, pp. 385-394	No endpoints for risk assessment are generated. Only amount of glyphosate adsorbed reported, no K _{oc} /K _{foc} .
2667	E-fate	Damonte et al.	2007	Some aspects of the glyphosate adsorption on montmorillonite and its calcined form. Clay and Health - clays in pharmacy, cosmetics, pelotherapy, and environment protection .	Applied Clay Science (2007) , Vol. 36, No. 1/3, pp. 86-94	Study design is not relevant for the European regulatory purposes. Adsorption to specific mineral, no relevant endpoints were determined.
776	E-fate	De et al.	2006	Effect in glyphosate adsorption on clays and soils heated and characterization by FT-IR spectroscopy.	Geoderma, (DEC 15 2006) Vol. 136, No. 3-4, pp. 738-750	Study design not relevant for the European regulatory purposes. Adsorption of glyphosate was tested on clay minerals and soil. The effect of heating on the clay and soils was investigated. The glyphosate concentration in the supernatant was not determined. No endpoints can be derived.
994	E-fate	Djonova et al.	2008	Effects of mechanical and chemical combating Sorghum halepensis (L.) Pers on soil microflora.	Journal of Balkan Ecology (2008) , Vol. 11, No. 4, pp. 383-390	Findings not related to environmental fate. The effect of glyphosate on the microbial population was investigated.
614	E-fate	Doublet et al.	2009	Delayed degradation in soil of foliar herbicides glyphosate and sulcotrione previously absorbed by plants : consequences on herbicide fate and risk assessment .	Chemosphere, (2009 Oct) Vol. 77, No. 4, pp. 582-9	Study design not relevant for the European regulatory purposes. Glyphosate was sprayed on leaves of oilseed rape and maize plants instead of bare soil.
2459	E-fate	Ersilia et al.	2008	Researches regarding the microorganisms influence on glyphosate biodegradation	Journal of Agroalimentary Processes and Technologies (2008), 14(2), 498-502	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. No endpoints for risk assessment are generated. The effect of glyphosate on the soil microbial biomass was investigated.
2899	E-fate	Eser et al.	2007	The effects of glyphosate isopropylamine and trifluralin on the carbon mineralization of olive tree soils . Original Title: Zeytin Topraklarinin Karbon Mineralizasyonuna Glyphosate Isopropylamine ve Trifluralin and apos;in Etkileri.	Turkish Journal of Agriculture and Forestry, (2007) Vol. 31, No. 5, pp. 297-302	Study design and test system that are not relevant for the European regulatory purposes and publications dealing with a Roundup formulation and thus not relevant to the EU glyphosate renewal.

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
478	E-fate	Ghanem et al.	2007	Concentrations and specific loads of glyphosate , diuron, atrazine, nonylphenol and metabolites thereof in French urban sewage sludge.	Chemosphere, (2007 Nov) Vol. 69, No. 9, pp. 1368-73	Test system not relevant for the European regulatory purposes. The concentration of glyphosate in sewage sludge was determined.
1235	E-fate	Ghanem et al.	2006	Fate of herbicides and nonylphenol in soil - plant - water systems amended with contaminated sewage sludge	Environmental Chemistry Letters. Vol. 4, no. 2, pp. 63-67. Jun 2006	Study design not relevant for the European regulatory purposes. A mixture of compounds was studied.
2675	E-fate	Gimsing et al.	2007	Sorption of glyphosate and phosphate by variable-charge tropical soils from Tanzania.	Geoderma, (FEB 15 2007) Vol. 138, No. 1-2, pp. 127-132	Study design that is not relevant for the European regulatory purposes and Publication generating endpoints that are not relatable to the EU level risk assessment. Competitive sorption of glyphosate and phosphate was investigated.
1655	E-fate	Gomez et al.	2009	Impact of glyphosate application on microbial biomass and metabolic activity in a Vertic Argiudoll from Argentina.	European Journal of Soil Biology, (MAR-APR 2009) Vol. 45, No. 2, pp. 163-167	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. No endpoints for risk assessment are generated. The effect of glyphosate on the soil microbial biomass was investigated.
2362	E-fate	Goudarzi et al.	2009	QSPR Modeling of Soil Sorption Coefficients (KOC) of Pesticides Using SPA-ANN and SPA-MLR.	J. Agric. Food Chem., Vol. 57, Issue 15, Page 7153-7158, Publication Year 2009	Publication where glyphosate was not the focus of the publication. A QSAR model was developed, glyphosate was among the 124 substances used as input data.
787	E-fate	Hu et al.	2009	Effect of Glyphosate on Soil Enzyme	Journal of Agro-Environment Science [J. Agro-Environ. Sci.]. Vol. 28, no. 4, pp. 680-685. 20 Apr 2009	The article is in Chinese.
2213	E-fate	Hushon	2006	Pesticides in Southwest Florida waterways - A report card.	Florida Scientist, (2006) Vol. 69, No. Suppl. 2, pp. 100-116	Publications not dealing with EU representative uses / conditions (non-EU monitoring).
1276	E-fate	Jankowska et al.	2008	Fluctuations in counts of some microorganisms in lake water caused by the herbicide ROUNDUP 360 SL.	Polish Journal of Natural Sciences (2008) , Vol. 23, No. 1, pp. 121-133	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. The effect of glyphosate concentration on the counts of bacteria in lake water was investigated. No endpoints for risk assessment are generated.
2036	E-fate	Klier et al.	2008	Modelling the Environmental Fate of the Herbicide Glyphosate in Soil Lysimeters	Water, air and soil pollution. Focus (2008) , Vol. 8, No. 2, pp. 187-207	Not relevant, as the focus is on development of a model and transgenic soybeans play a major role. The TSCF was only calculated by a model and no results is given. Additionally, glyphosate was applied to plants by foliar application (not to bare soil).
3089	E-fate	Kolpin et al.	2006	Urban contributions of glyphosate and its degradate AMPA to streams in the United States.	Science of the Total Environment (2006) , Vol. 354, No. 2/3, pp. 191-197	Publication not dealing with Japan/European conditions (field location in the United States).
1493	E-fate	Laitinen et al.	2007	Glyphosate translocation from plants to soil - does this constitute a significant proportion of residues in soil	Plant and soil (2007) , pp. 51-60	Study design not relevant for the European regulatory purposes. Translocation of glyphosate (N-(phosphonomethyl)glycine) to plant roots and its impact on detected herbicide residues in sandy loam soil were studied in a glasshouse pot experiment in Finland. Glyphosate was sprayed on leaves of Quinoa plants.
1236	E-fate	Laitinen et al.	2006	Fate of the herbicides glyphosate, glufosinate-ammonium,	Pest Manage. Sci., Vol. 62, Issue 6, Page 473-491, Publication Year	Study design not relevant for the European regulatory purposes. Glyphosate (Roundup ready) was sprayed on

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
				phenmedipham, ethofumesate and metamitron in two Finnish arable soils.	2006	glyphosate resistant sugar beet instead of bare soil.
2652	E-fate	Magga et al.	2008	Soil column experiments used as a means to assess transport , sorption , and biodegradation of pesticides in groundwater .	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2008 Nov) Vol. 43, No. 8, pp. 732-41	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. Column leaching was performed with artificial groundwater (not artificial rainwater) and over a period of 6.5 months glyphosate was continuously applied to the column.
712	E-fate	Newton et al.	2008	Dissipation of four forest-use herbicides at high latitudes.	Environmental science and pollution research international, (2008 Oct) Vol. 15, No. 7, pp. 573-83	Publications not dealing with Japan/EU representative uses / conditions (e.g. field location) . Dissipation of glyphosate was investigated in forests of Alaska.
1623	E-fate	Ockerman	2008	Hydrologic Conditions and Quality of Rainfall and Storm Runoff for Two Agricultural Areas of the Oso Creek Watershed, Nueces County, Texas, 2005-07	Scientific Investigations Report. U.S. Geological Survey. no. 2008-5103, 67 pp. 2008	Publication not dealing with Japan/EU representative conditions (i.e. monitoring location). The purpose of this report was to characterize hydrologic conditions and the water quality of rainfall and storm runoff for two primarily agricultural subwatersheds in the Oso Creek watershed in Nueces County (Texas, U.S.).
1917	E-fate	Peruzzo et al.	2008	Levels of glyphosate in surface waters , sediments and soils associated with direct sowing soybean cultivation in north pampasic region of Argentina.	Environmental pollution (Barking, Essex : 1987), (2008 Nov) Vol. 156, No. 1, pp. 61-6	Publication not dealing with Japan/EU conditions (field location in Argentina and a transgenic soybean cultivation area).
1451	E-fate	Pessagno et al.	2008	Glyphosate behavior at soil and mineral-water interfaces.	Environmental pollution (Barking, Essex : 1987), (2008 May) Vol. 153, No. 1, pp. 53-9	Study design not relevant for the European regulatory purposes. Adsorption was tested in solutions with adjusted pH. Isotherms were established according to Langmuir. One soil was previously treated with H2O2 to reduce organic matter content.
1476	E-fate	Rampoldi et al.	2008	Glyphosate mineralization : effect of temperature and soybean and corn crop residues .	Chilean Journal of Agricultural Research (2008) , Vol. 68, No. 1, pp. 13-20	Study design not relevant for the European regulatory purposes. The kinetics of mineralization of glyphosate in stubbles of soybean and corn were investigated. No endpoints for risk assessment are generated.
610	E-fate	Sailaja et al.	2006	Degradation of glyphosate in soil and its effect on fungal population .	Journal of environmental science and engineering, (2006 Jul) Vol. 48, No. 3, pp. 189-90	Study design not relevant for the European regulatory purposes. Glyphosate (Glycel, 41% pure) was sprayed on the foliage of weeds instead of bare soil.
261	E-fate	Sandall et al.	2009	Avoiding Glyphosate and Atrazine Runoff and Groundwater Contamination	Crop watch (2009) , No. 18 Source Note: 2009 June 26, no. 18	Opinion article that provides no new data that can be used for risk assessment. Guidance for farmers on how to avoid runoff of glyphosate and atrazine.
284	E-fate	Santos et al.	2009	Biodegradation of glyphosate in rhizospheric soil cultivated with Glycine max, Canavalia ensiformis and Stizolobium aterrimum.	Planta Daninha (2009) , Vol. 27, No. 4, pp. 781-787	Study design not relevant for the European regulatory purposes. Untreated and previously cultivated Brazilian soil (Red-Yellow Argisol) was incubated with glyphosate for 32 days. Only the evolved CO2 was measured. No endpoints for risk assessment are generated.
479	E-fate	Scribner et al.	2007	Concentrations of Glyphosate, Its Degradation Product, Aminomethylphosphonic Acid, and Glufosinate in Ground-and Surface-	Scientific Investigations Report. U.S. Geological Survey. no. 2007-5122, 112 pp. 2007. URL (Document):	Publication not dealing with Japan/EU representative conditions (i.e. monitoring location). The concentration of glyphosate and AMPA was determined in soil, rainfall, ground- and surface water samples collected in the U.S..

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
				Water, Rainfall, and Soil Samples Collected in the United States, 2001-06		
2672	E-fate	Shushkova et al.	2009	Sorption and microbial degradation of glyphosate in soil suspensions	Applied biochemistry and microbiology (2009) , pp. 599-603	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. The adsorption of glyphosate was studied after application of a product (Ground Bio) containing the active agent is glyphosate isopropylamine salt. No endpoints for risk assessment are generated.
1488	E-fate	Starrett et al.	2008	Glyphosate runoff when applied to zoysiagrass under golf course fairway conditions	ACS Symposium Series, (2008) Vol. 997, No. Fate of Nutrients and Pesticides in the Urban Environment, pp. 237-253, 1 plate	Publication not dealing with Japan/EU representative conditions (i.e. non-EU field location). Publication dealing with a Roundup formulation that is not representative for AIR5. The objectives of the study were: (1) to measure glyphosate runoff from zoysiagrass fairways on a golf course in Kansas (U.S.) following the application of Roundup herbicide, (2) to determine glyphosate runoff concentrations and their resulting effect on the environment, and (3) to provide up-to-date data of research findings on pesticide transport when applied to turfgrass.
2691	E-fate	Stenrod et al.	2006	Spatial variability of glyphosate mineralization and soil microbial characteristics in two Norwegian sandy loam soils as affected by surface topographical features	Soil biology and biochemistry (2006) , Vol. 38, No. 5, pp. 962-971	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. The effect of glyphosate concentration on soil physical and microbial properties was investigated. Furthermore, the mineralization rate of glyphosate was determined in different activity samples. No endpoints for risk assessment are generated.
121	E-fate	Wang et al.	2009	Adsorption Kinetics of Glyphosate and Copper(II) Alone and Together on Two Types of Soils	Soil Science Society of America journal (2009) , pp. 1995-2001	No endpoints for risk assessment are generated. Adsorption kinetics were investigated in a flow method (column) experiment, but no adsorption coefficient determined.
568	E-fate	Wang et al.	2006	Cosorption of zinc and glyphosate on two soils with different characteristics.	Journal of Hazardous Materials, (SEP 1 2006) Vol. 137, No. 1, pp. 76-82	Study design not relevant for the European regulatory purposes. Adsorption isotherms were determined for glyphosate in absence and presence of Zn. NaNO3 was used as test solution instead of CaCl2. Isotherms are shown graphically but no linear equations are presented. No endpoints can be derived from the study.
1021	E-fate	Warnemuende et al.	2007	Effects of tilling no-till soil on losses of atrazine and glyphosate to runoff water under variable intensity simulated rainfall	Soil and tillage research (2007) , Vol. 95, No. 1-2, pp. 19-26	Publication not dealing with Japan/EU representative conditions (i.e. field location). The runoff of glyphosate and atrazine was tested on field plots in the U.S..
1899	E-fate	Xu et al.	2009	Land use and riparian effects on prairie wetland sediment properties and herbicide sorption coefficients.	Journal of environmental quality, (2009 Jul-Aug) Vol. 38, No. 4, pp. 1757-65	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. Adsorption study performed with sediment of a wetland. Only mean values (5 sampling points and four cores per point) were reported.
641	E-fate	Yoshioka et al.	2006	Determination of Glyphosate and Its Major Metabolite Aminomethylphosphonic Acid in River Water and Tap Water by High-	Bunseki Kagaku [Bunseki Kagaku]. Vol. 55, no. 3, pp. 177-184. 2006. ISSN: 0525-1931	The article is about the development of analytical method to analyze Glyphosate and AMPA in river water and tap water which is considered not relevant for the submission in Japan.

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
				Performance Liquid Chromatography with Postcolumn Derivatization Method		
1781	E-fate	Zablotowicz et al.	2006	Influence of watershed system management on herbicide concentrations in Mississippi Delta oxbow lakes.	The Science of the total environment, (2006 Nov 1) Vol. 370, No. 2-3, pp. 552-60. Electronic Publication: 2006-09-26	Publication where glyphosate or a relevant metabolite were not the focus of the publication. Glyphosate was not among the active substances measured in the article.
1477	E-fate	Zhao et al.	2009	Glyphosate mobility in soils by phosphate application: Laboratory column experiments.	Geoderma, (MAR 15 2009) Vol. 149, No. 3-4, pp. 290-297	Study design not relevant for the European regulatory purposes. Adsorption and column experiments were performed with glyphosate. For the adsorption experiments the soil pH was adjusted to pH 3–9. The flow direction of the column experiment was from bottom to top. According to the OECD 312 guideline, artificial rain should be applied to the soil columns and the leachate collected. No endpoints were determined in the study.
220	Efficacy	Ransom	2009	Applying Glyphosate Pre-Harvest in Small-Grains	Crop and pest report (2009) , Number 12, pp. 7-8 Source Note: 2009 July 29, issue 12	The article is an application recommendation/suggestion from the North Dakota State University (NDSU) to the farmers. The glyphosate-note is just a small part of it.
37	Efficacy	Service	2007	A growing threat down on the farm.	Science, (25 May 2007) Vol. 316, No. 5828, pp. 1114-1117.	The articles provides an overview about the history and market importance of glyphosate, brief description of a mode of action, first resistance cases, advantages of no-till agriculture, possible replacements/supplements for glyphosate resistant crops.
1209	Human safety (metabolism/toxicology)	Acquavella et al.	2006	Exposure misclassification in studies of agricultural pesticides: Insights from biomonitoring	Epidemiology (Jan 2006) Vol. 17, No. 1, pp. 69-74	A algorithm proposed by Dosemeci and colleagues to estimate lifetime average exposure intensity from questionnaire information. The algorithm was evaluated to measure urinary pesticide concentrations for farmers who applied glyphosate. Statistical analyses included nonparametric correlations, assessment of categorical agreement, and categorical evaluation of exposure distributions.
1698	Human safety (metabolism/toxicology)	Amer et al.	2006	In vitro and in vivo evaluation of the genotoxicity of the herbicide glyphosate in mice .	Bulletin of the National Research Centre (Cairo), (2006) Vol. 31, No. 5, pp. 427-446	Information on concentrations is questionable for in vitro part, as M glyphosate/mL medium is no scientific unit for a concentration. It should be noted, that an ip. injection is not a relevant route of administration and thus considered not relevant to human risk assessment.
2086	Human safety (metabolism/toxicology)	Anadon et al.	2008	Neurotoxicological effects of the herbicide glyphosate	Toxicology Letters [Toxicol. Lett.]. Vol. 180, S164 p. 5 Oct 2008	No full text available (congress abstract only)
1147	Human safety (metabolism/toxicology)	Andre et al.	2007	Evaluation of bulky DNA adduct levels after pesticide use: comparison between open-field farmers and fruit growers.	Toxicol. Environ. Chem., Vol. 89, Issue 1, Page 125-139, Publication Year 2007	Groups of farmers were classified according to the main pesticide sprayed (triazoles or chlorothalonil for open-field farmers n=19; captan for fruit growers n=29). Two blood samples were collected on consecutive days for each farmer, and white blood cell bulky DNA adduct levels were evaluated by 32P-postlabelling method. Glyphosate was only detected in 1/29 farmers. No association between glyphosate exposure and bulky adducts was observed.

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
						Farmers were exposed to pesticide mixtures, no further information on exposure and the exposed substances (batch, manufacturer, analytics, adjuvants) were given.
873	Human safety (metabolism/toxicology)	Astiz et al.	2009	Effect of pesticides on cell survival in liver and brain rat tissues.	Ecotoxicology and environmental safety, (2009 Oct) Vol. 72, No. 7, pp. 2025-32	Non-relevant route of exposure (i.p. injections)
206	Human safety (metabolism/toxicology)	Astiz et al.	2009	Antioxidant defense system in rats simultaneously intoxicated with agrochemicals.	Environmental Toxicology and Pharmacology, (NOV 2009) Vol. 28, No. 3, pp. 465-473	Non-relevant route of exposure (i.p. injections)
1469	Human safety (metabolism/toxicology)	Baucom et al.	2008	Glyphosate induces transient male sterility in Ipomoea purpurea	Botany (2008) , Volume 86, Number 6, pp. 587-594, Electronic ISSN: 1916-2804 Source Note: 2008 June, v. 86, no. 6	The article relates to reproduction and fertility in male Ipomoea purpurea (flower - morning-glory). The test item was not identified in the M&M section (although it seems that they used a Roundup formulation probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan). In addition, the study design and test system are not really relevant for the European regulatory purposes (flowering is not a parameter to be used in the RA). Furthermore, an important part of the test was conducted under US field conditions and therefore, not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.).
2987	Human safety (metabolism/toxicology)	Benachour et al.	2007	Time-and dose-dependent effects of roundup on human embryonic and placental cells.	Archives of environmental contamination and toxicology, (2007 Jul) Vol. 53, No. 1, pp. 126-33	Excessive doses exceed typical in vitro limit doses. In vitro test system is inappropriate for formulations containing surfactants.
1463	Human safety (metabolism/toxicology)	Benachour et al.	2009	Glyphosate formulations induce apoptosis and necrosis in human umbilical, embryonic , and placental cells.	Chemical research in toxicology, (2009 Jan) Vol. 22, No. 1, pp. 97-105	Excessive doses exceed typical in vitro limit doses. In vitro test system is inappropriate with surfactants
2890	Human safety (metabolism/toxicology)	Caglar et al.	2008	The effect of sub-acute and sub-chronic exposure of rats to the glyphosate -based herbicide Roundup.	Environmental Toxicology and Pharmacology, (JAN 2008) Vol. 25, No. 1, pp. 57-62	The aim of the study was biochemical and histopathological examination of the toxic effects of glyphosate-based herbicide Roundup in rat liver, However the tested Roundup contains POEA which is no longer in the composition of the representative formulation.
2515	Human safety (metabolism/toxicology)	Cericato et al.	2009	Responsiveness of the interrenal tissue of Jundia (Rhamdia quelen) to an in vivo ACTH test following acute exposure to sublethal concentrations of agrochemicals	Comparative Biochemistry and Physiology, Part C: Toxicology and Pharmacology (2009), 149C(3), 363-367	Jundiá (Rhamdia quelen) [catfish]; not relevant species.
1411	Human safety (metabolism/toxicology)	Climent et al.	2008	Glyphosate Poisoning	Clinical Toxicology [Clin. Toxicol.]. Vol. 46, no. 5, p. 419. Jun 2008	The publication is reporting effects after a 39-year-old male patient who consumed intentionally more than 200 ml of glyphosate. This is not relevant for glyphosate dossier and risk assessment.
2294	Human safety (metabolism/toxicology)	Dallegrave et al.	2007	Pre-and postnatal toxicity of the commercial glyphosate formulation in Wistar rats .	Archives of toxicology, (2007 Sep) Vol. 81, No. 9, pp. 665-73	Non-relevant formulation tested

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
2159	Human safety (metabolism/toxicology)	El-Shenawy	2009	Oxidative stress responses of rats exposed to Roundup and its active ingredient glyphosate .	Environmental Toxicology and Pharmacology, (NOV 2009) Vol. 28, No. 3, pp. 379-385	The publication is reporting information on oxidative stress responses to rats exposed to Roundup and its active ingredient glyphosate; however using intraperitoneal route of exposure which is not relevant for risk assessment.
2207	Human safety (metabolism/toxicology)	Fisher et al.	2008	Pesticide-associated pemphigus vulgaris.	Cutis, (2008 Jul) Vol. 82, No. 1, pp. 51-4	Case report 40 year old men with pemphigus vulgaris, developed within days of a one-time heavy exposure to fumes of burning glyphosate. No defined information on exposure and the exposed substance (batch, manufacturer, analytics, adjuvants) were given.
1592	Human safety (metabolism/toxicology)	Gardner et al.	2008	Herbicides, glyphosate resistance and acute mammalian toxicity : simulating an environmental effect of glyphosate - resistant weeds in the USA.	Pest management science, (2008 Apr) Vol. 64, No. 4, pp. 470-8	Usage field-level data to assess glyphosate-resistant (GR) technology with a mammalian toxicity environmental indicator. Use is made of Agricultural Resource Management Survey (ARMS) data collected by the United States Department of Agriculture (USDA) to calculate actual farm-level LD50 doses, and a treatment effect regression model is employed to test the hypotheses. The article is dealing with model prediction which is not a toxicological endpoint and then not relevant for risk assessment.
1388	Human safety (metabolism/toxicology)	Gasnier et al.	2009	Glyphosate -based herbicides are toxic and endocrine disruptors in human cell lines.	Toxicology, (2009 Aug 21) Vol. 262, No. 3, pp. 184-91	Excessive doses exceed typical in vitro limit doses. In vitro test system is inappropriate with formulation containing surfactants.
1389	Human safety (metabolism/toxicology)	Gehin et al.	2006	Glyphosate -induced antioxidant imbalance in HaCaT: The protective effect of vitamins C and E.	Environmental Toxicology and Pharmacology, (JUL 2006) Vol. 22, No. 1, pp. 27-34	Roundup 3 plus®, induced significant changes in cellular antioxidant status as a glutathione depletion, enzymatic (catalase, glutathione-peroxidase and superoxide dismutase) disorders, and increased lipid peroxidation. Tested product contains 8% (m/m) polyoxyethylene amine (POEA), which is no longer in the composition of the representative formulation.
1103	Human safety (metabolism/toxicology)	Heras-Mendoza et al.	2008	Erythema multiforme-like eruption due to an irritant contact dermatitis from a glyphosate pesticide.	Contact dermatitis, (2008 Jul) Vol. 59, No. 1, pp. 54-6	Case report 37 year old female gardener noticed redness on her arms which became eczematous on day 2. At 5 day erythematous-purpuric plaques appeared on the skin of the upper extremities as well as target-like lesions on the abdomen, axillae and groin. After recovery, patch tests performed with the Spanish Standard series (True Test and Chemotechnique) and the Pesticide series (Martí Tor , Barcelona, Spain) were negative. The observed irritant contact dermatitis (ICD) was developed by sweat or wet conditions. Additionally, she delayed rinsing off the herbicide. Tested product contains polyoxyethylene amine (POEA), which is no longer in the composition of the representative formulation.
2880	Human safety (metabolism/toxicology)	Lee et al.	2008	The early prognostic factors of glyphosate - surfactant intoxication.	The American journal of emergency medicine, (2008 Mar) Vol. 26, No. 3, pp. 275-81	Case study on intoxicated patients (58 patients (19 men and 39 women; age, 48.8 ± 15.8 years)) of Chang Gung Memorial Hospital, Taiwan from April 1996 to March 2003

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
						and Taichung Veterans General Hospital, Taiwan from April 2000 to October 2003. No information on substance, administered dose and incidence of intoxication for the patients are given. The intake of the substance was only confirmed via physical examination and statements of patients/witnesses (no analytical analysis was performed).
1083	Human safety (metabolism/toxicology)	Lerda	2009	Endocrine disruptors (ED) and human exposure	Research and Reviews in BioSciences, (2009) Vol. 3, No. 2-3, pp. 106-111	In occupational exposure studies, the exposed and control individuals' blood, urine or sperm samples were used, mainly to determine the level of exposure. No defined information on time and/or way of exposure and the exposed substance (batch, manufacturer, analytics, adjuvants) were given. The levels of several pollutants were studied as well as other biochemical parameters related to exposure (gentox and mutagenesis, sperm quality, prostate, neurobehaviour, cancer). The observed effect were not assignable to the reasoning chemical.
709	Human safety (metabolism/toxicology)	Levine et al.	2007	Disrupting mitochondrial function with surfactants inhibits MA-10 Leydig cell steroidogenesis	Cell Biology and Toxicology, (2007) Vol. 23, No. 6, pp. 385-400	The study results demonstrate how perturbation of the mitochondrial membrane by surfactants inhibits import, processing, and cholesterol transfer activity and underscore the importance of including sensitive assays that evaluate mitochondrial function when screening for potential effects on steroidogenesis with in vitro test systems. The roundup product tested contains 16.5% glyphosate-isopropylamine salt (which corresponds to approximately 12.2% glyphosate acid) and 6.1% MON 0818 (POEA). POEA is no longer in the composition of the representative formulation.
1338	Human safety (metabolism/toxicology)	Manas et al.	2009	Genotoxicity of glyphosate assessed by the comet assay and cytogenetic tests.	Environmental Toxicology and Pharmacology (2009) , Vol. 28, No. 1, pp. 37-41	This study applied 3 genotoxicity tests with obvious deviations to current guidelines. The i.p. route of exposure used for the micronucleus assay renders the study irrelevant for human exposure. In the in vitro assays most concentrations used were above 1 mM. Because it is physiologically not possible to attain such concentrations in standard regulatory in vivo testing due to the limited oral bioavailability (approx. 20%), very low dermal absorption, and rapid systemic elimination of glyphosate in in vivo test systems, the results of the in vitro test are not considered relevant for human health risk assessment of glyphosate. Positive in vitro findings were only observed at concentrations above 1 mM.
2210	Human safety (metabolism/toxicology)	Mink et al.	2008	Pesticides and prostate cancer : A review of epidemiologic studies with specific agricultural exposure information.	European Journal of Cancer Prevention, (April 2008) Vol. 17, No. 2, pp. 97-110	Publication is a Secondary information (e.g. scientific or regulatory reviews) and as such not relevant for the risk assessments. Data of primary research articles matching search terms of the Glyphosate search are evaluated elsewhere in the Literature review.

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
1158	Human safety (metabolism/toxicology)	Mladinic et al.	2009	Evaluation of genome damage and its relation to oxidative stress induced by glyphosate in human lymphocytes in vitro .	Environmental and molecular mutagenesis, (2009 Dec) Vol. 50, No. 9, pp. 800-7	This study is a non-GLP, non-guideline in vitro study although it meets generally accepted scientific principles. However, due to the occurrence of apoptosis, a clear conclusion on the relevance of the positive response cannot be reached.
246	Human safety (metabolism/toxicology)	Mladinic et al.	2008	Assessment of oxidative DNA damage by glyphosate applying hOGG1 modified comet and micronucleus assay	Toxicology Letters [Toxicol. Lett.]. Vol. 180, pp. S170-S171. 5 Oct 2008	Abstract only; data presented refer to Mladinic et al. 2009
600	Human safety (metabolism/toxicology)	Moura et al.	2009	Cytogenetic biomonitoring of Brazilian workers exposed to pesticides: Micronucleus analysis in buccal epithelial cells of soybean growers.	Mutat. Res., Genet. Toxicol. Environ. Mutagen., Vol. 675, Issue 1-2, Page 1-4, Publication Year 2009	MNT analysis of buccal epithelial cells of soybean growers. 29 Brazilian workers exposed to pesticides in soybean fields and in 37 non-exposed individuals. Participants were grouped according their smoking and drink habits. No defined information on exposure and the exposed substances were given.
2813	Human safety (metabolism/toxicology)	Naydenova et al.	2007	Synthesis, cytotoxicity and clastogenicity of novel alpha-aminophosphonic acids.	Amino acids, (2007 Nov) Vol. 33, No. 4, pp. 695-702	This study is a non-GLP, non-guideline conforming in vivo study. The cytotoxicity, clastogenic and antiproliferative effect of different substances are tested. No informations on test items (batch, expiration date, storage, manufacturer) are given. Characterization of newly synthesized derivatives, where glyphosate was used as reference substance for cytotoxicity.
1019	Human safety (metabolism/toxicology)	Oliveira et al.	2007	Effects of the herbicide Roundup on the epididymal region of drakes <i>Anas platyrhynchos</i> .	Reproductive toxicology (Elmsford, N.Y.), (2007 Feb) Vol. 23, No. 2, pp. 182-91	Study on male ducks (<i>Anas platyrhynchos</i>); non-relevant species for risk assessment.
1082	Human safety (metabolism/toxicology)	Orton et al.	2009	Endocrine Disrupting Effects of Herbicides and Pentachlorophenol: In Vitro and in Vivo Evidence.	Environ. Sci. Technol., Vol. 43, Issue 6, Page 2144-2150, Publication Year 2009	12 environmentally relevant pesticides (11 herbicides and pentachlorophenol (PCP)) were tested for their endocrine disrupting potential in two in vitro assays. Glyphosate was not tested in the study. <i>Xenopus</i> oocytes were used to measure effects on the ovulatory response and ovarian steroidogenesis.
1130	Human safety (metabolism/toxicology)	Paz-Y-Mino et al.	2007	Evaluation of DNA damage in an Ecuadorian population exposed to glyphosate .	Genetics and Molecular Biology, (2007) Vol. 30, No. 2, pp. 456-460	This publication is assessed to be not relevant for human health risk assessment in the EU, as the glyphosate formulation (Roundup Ultra) was applied at much higher dose rates (20x maximum application rate) than recommended for the intended uses in the EU. Potential confounding effects from excess toxicity are thus compromising the relevance of this publication, especially since they were not sufficiently accounted for by the authors. In addition, the herbicide was combined with the adjuvant "Cosmoflux 411F", which will not be used in the EU, and might influence the results and interpretations drawn from the Comet Assay.
1340	Human safety (metabolism/toxicology)	Poletta et al.	2009	Genotoxicity of the herbicide formulation Roundup (glyphosate) in broad-snouted caiman (<i>Caiman latirostris</i>)	Mutation research, (2009 Jan 31) Vol. 672, No. 2, pp. 95-102	Comet assay and Micronucleus (MN) test on erythrocytes obtained from blood of hatched broad-snouted caiman (<i>Caiman latirostris</i>); non-relevant species for risk

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
				latirostris) evidenced by the Comet assay and the Micronucleus test.		assessment.
401	Human safety (metabolism/toxicology)	Prasad et al.	2009	Clastogenic Effects of Glyphosate in Bone Marrow Cells of Swiss Albino Mice	Journal of Toxicology [J. Toxicol.]. Vol. 2009, [np]. 2009	This study applied 2 in vivo genotoxicity tests, both with obvious deviations to current guidelines. The i.p. route of exposure used for the micronucleus and chromosomal aberration assay renders the study irrelevant for human exposure.
3011	Human safety (metabolism/toxicology)	Raipulis et al.	2009	Toxicity and Genotoxicity Testing of Roundup	Proceedings of the Latvian Academy of Sciences (2009) , Vol. 63, No. 1-2, pp. 29-32	The tested Roundup BIO formulation (Monsanto, Brussels, Belgium) contains polyoxyethylene amine (POEA), which is no longer in the composition of the representative formulation.
2134	Human safety (metabolism/toxicology)	Remor et al.	2009	Occupational exposure of farm workers to pesticides: Biochemical parameters and evaluation of genotoxicity.	Environ. Int., Vol. 35, Issue 2, Page 273-278, Publication Year 2009	Evaluation of the activities of butyrylcholinesterase (BChE) and -aminolevulinic acid dehydratase (ALA-D) enzymes, hematol., lipid parameters and genotoxicity using Comet assay in peripheral blood leukocytes and a micronucleus (MN) test in oral mucosa cells of agricultural workers. 37 male pesticides applicators (sprayers) exposed since childhood to a mixture of pesticides. No defined information on exposure or substances were given.
8	Human safety (metabolism/toxicology)	Sakamoto et al.	2007	A 52-week feeding study of genetically modified soybeans in F344 rats .	Shokuhin eiseigaku zasshi. Journal of the Food Hygienic Society of Japan, (2007 Jun) Vol. 48, No. 3, pp. 41-50.	No glyphosate data included in the article.
603	Human safety (metabolism/toxicology)	Simoniello et al.	2008	DNA damage in workers occupationally exposed to pesticide mixtures.	J. Appl. Toxicol., Vol. 28, Issue 8, Page 957-965, Publication Year 2008	Evaluation of 54 subjects occupationally exposed to a large number of pesticides (directly or indirectly) and 30 subjects as a control group using the quantification of DNA damage level by means of the alkaline Comet assay and the evaluation of repair processes. No defined information on time and/or way of exposure and the exposed substance (batch, manufacturer, analytics, adjuvants) were given.
2057	Human safety (occupational exposure)	Aleguas et al.	2007	Morbidity of Agricultural Chemical Use in Guyana	Clinical Toxicology [Clin. Toxicol.]. Vol. 45, no. 4, p. 361. May 2007	Only an abstract available without details
1716	Human safety (occupational exposure)	Colt et al.	2007	Inferring past pesticide exposures: A matrix of individual active ingredients in home and garden pesticides used in past decades.	Environmental Health Perspectives, (Feb 2007) Vol. 115, No. 2, pp. 248-254	Describes the development of an exposure classification tool to classify pesticide exposure status. Article does not report pesticide exposure status or health outcomes for any study population.
2172	Human safety (occupational exposure)	Monge et al.	2007	Parental occupational exposure to pesticides and the risk of childhood leukemia in Costa Rica.	Scandinavian Journal of Work Environment and Health, (AUG 2007) Vol. 33, No. 4, pp. 293-303	Publication describes general pesticide, exposures, general herbicide exposures, or collective exposures of "paraquat, chlorothalonil, glyphosate, and others."
2452	Human safety (occupational exposure)	Ogg	2008	Research: Pesticide Exposure Extends to Applicators Family	Crop watch (2008) , No. 8 Source Note: 2008 Apr. 25, no. 8	Non peer-reviewed web publication of University of Nebraska.
137	Human safety (occupational exposure)	Spiller et al.	2008	Agricultural chemical exposure in small farmers in Guyana.	Toxicological and Environmental Chemistry, (2008) Vol. 90, No. 2, pp. 361-365.	Publication describes general pesticide exposures (not glyphosate specific)
306	Human safety	Ugaddan et al.	2009	Brain acetylcholinesterase (AChE)	Asia Life Sciences, (JAN-JUN	Study in Oreochromis niloticus L. (tilapia, a cichlid fish);

Submission Number	Technical section	Author(s)	Year	Title	Source	Justification for non-relevance
	(occupational exposure)			activity and liver melanomacrophage centers (MMCs) formation in Nile tilapia (<i>Oreochromis niloticus</i> L.) following exposure to glyphosate herbicide.	2009) Vol. 18, No. 1, pp. 73-85. ISSN: 0117-3375.	not a relevant species for risk assessment. It focuses on the effects of an unidentified formulation of glyphosate on fishes (Nile tilapia), the study only refers to findings based on cellular and molecular level that cannot be related to the Ecotox risk assessment.
2648	Human safety (occupational exposure)	Zhai et al.	2008	Skin decontamination of glyphosate from human skin in vitro .	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2008 Jun) Vol. 46, No. 6, pp. 2258-60	The article is comparing three model decontaminant solutions for their ability to remove a glyphosate (only used as model herbicide) from an in vitro model. Glyphosate is only used as a control substance (not tested with different doses).
2166	Human safety (toxicology)	Perez-Herrera et al.	2008	PON1Q192R genetic polymorphism modifies organophosphorus pesticide effects on semen quality and DNA integrity in agricultural workers from southern Mexico	Toxicology and Applied Pharmacology, (2008) Vol. 230, No. 2, pp. 261-268	Semen quality of agricultural workers with general high exposure to pesticides (29 different substances), mainly focused on orhanophosphors, was investigated. No defined information on exposure or substances were given.

Appendix 1: ORIGINAL SEARCH QUERY - July 2006 – December 2009

Preparing the search queries on STN:

FILE 'STNGUIDE' ENTERED AT 18:54:53 ON 01 JUL 2020
CHARGED TO COST=113898

- L1 QUE SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6
SAVE TEMP L1 GLY1/Q
- L2 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
EYE? OR IRRIT? OR SENS? OR ALLERG?
- L3 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?
- L4 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
OR HORMON? OR GONAD? OR DISRUPT?
- L5 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
OCCUPAT?
- L6 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
RISK ASSESSMENT?
- L7 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING
- L8 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?
- L9 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE
- L10 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR
SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER
- L11 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT
- L12 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR
PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR
HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE
MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT
PROCESSES
- L13 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAI
NS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR
OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER
OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR
PERSISTENCE OR LIGAND
- L14 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR
?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR
BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR
EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR
PROTECTION GOALS OR ECO?
- L15 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY
OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC
OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS?
OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI?
OR ALG? OR CHIRON?
- L16 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR
LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR
INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR
APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR QUE PLANT
AND (SUBMERGE? OR EMERGE?)
- L17 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR
FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR
RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR
ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR
PARASITOID
- L18 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIU
S OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL?
OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR
MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR
NITROGEN
- L19 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR
SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR
ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB?
OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL

Literature Review Report

Scientific peer-reviewed open literature for the approval of pesticide active substances glyphosate and metabolites

as under Article 8(5) of Regulation (EC) No 1107/2009 (Ref. EFSA Journal 2011; 9(2) 2092)

Report number

108689-CA9-1

Author

Anonymous, 2020

Sponsor

Bayer Agriculture BV

(on behalf of the Glyphosate Renewal Group, AIR5)

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May 19, 2020

Date of searches:

28 October 2019 (Part 0), 8 June 2018 (Part 1), 8 July 2019 & 10 July 2019 (Part 2a & 2b),

7 January 2020 (Part 3), 24 February 2020 (Part 4), 27 February 2020 (Part 5a & 5b);

04 May 2020 (Part 6)

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1 Summary

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA Guidance document EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG) on how to present the literature search in the dossier has been followed. Please refer to Appendix 1 (page 283) for more details.

The objective of the literature search was to identify and assess scientific peer-reviewed open literature published within the 10 years prior to the dossier submission date for relevance in the risk assessment of glyphosate and its metabolites regarding toxicity, ecotoxicity, environmental and consumer risk as specified in Article 8(5) of Regulation (EC) No 1107/2009.

The literature search was conducted accessing 11 bibliographic databases via the service provider STN.

Due to a large amount of public literature available for glyphosate, the search has been divided into six parts. Please refer to Appendix 2 (page 284) to see the article selection process in detail.

All six parts of the literature search were combined, and upon removal of duplicates 11,326 articles in total were identified. All 11,326 articles were subsequently assessed for their relevance at title/abstract level (via “rapid assessment” according to the procedure and requirements in the EFSA Guidance document EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”).

A total of 9,784 of the 11,326 articles were identified as “non-relevant” in the rapid assessment (e.g. publications dealing with chemical synthesis, efficacy, analytical methods etc.) and excluded from further evaluation. Due to the large quantity of data, and as agreed with the AGG, the list of articles and the justification for their non-relevance is provided in a standalone Literature Review Excel File.²

For the remaining 1,542 articles, identified as potentially “relevant” or of “unclear relevance” in the rapid assessment, the full-text documents³ have been reviewed in detail (“detailed assessment”).

Total of 852 articles of the 1,542 articles were identified as “non-relevant” in the detailed assessment and were excluded from further evaluation. The list of the articles and the justification for their non-relevance is provided in Table 38.

The remaining 690 articles identified as “relevant” in the detailed assessment were classified according to the EFSA Guidance Document (Point 5.4.1).

Category A) For articles, which appeared to be relevant after the detailed assessment and provided data for establishing or refining risk assessment parameters a reliability assessment has been performed. For articles identified as reliable or reliable with restrictions, summaries have been compiled and are presented in the MCA / MCP part of the respective dossier section (ecotoxicology, environmental fate, residues, toxicology). The list of these category A & reliable / reliable with restrictions articles can be found in Table 32 and Table 33 of this Literature Review Report document.

¹ (aminomethyl)phosphonic acid (AMPA), N-acetyl-AMPA, N-acetyl-glyphosate, (hydroxymethyl)phosphonic acid (HMPA), N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA, methylphosphonic acid and N-methylglyphosate.

² Please note that the Literature Review Excel File will be submitted on the USB hard drive as a standalone document.

³ All articles used within the glyphosate dossier have been purchased via Copyright Clearance Centre. In some cases, please note that the Copyright Clearance is not overtly visible, and in some instances is part of the article documents. Should the Copyright Clearance proof be required, this can be provided upon request.

Category B) For articles relevant to the data requirement but in opinion of the applicant providing only supplementary information that does not alter existing risk assessment a justification for such decision is provided. The list of these category B articles and the justifications can be found in Table 34 and Table 35 of this Literature Review Report document.

Category C) For articles of an unclear relevance an explanation is provided why the relevance could not be determined. The list of these category C articles and the explanations can be found in Table 36 and Table 37 of this Literature Review Report document.

The full outcome of the literature search for all technical sections is provided in Table 1.

Table 1: Summary of the literature review

Section	Number of articles found	Rapid assessment (title/abstract level)		Detailed assessment (full-text level)	
		non-relevant articles	potentially relevant / unclear relevance	non-relevant articles	relevant articles (category A+B+C)
Efficacy / Agronomy*	4324	4324	n.a.	n.a.	n.a.
Analytical methods*	117	117	n.a.	n.a.	n.a.
Others non-relevant categories*	2430	2430	n.a.	n.a.	n.a.
Ecotoxicology	1464	918	546	398	148
E-fate	1062	759	303	132	171
Residues	475	405	70	30	40
Toxicology	1454	831	623	292	331
Total	11326	9784	1542	852	690

*Efficacy / Agronomy (e.g. reporting desired effects on organisms to be controlled) and development of analytical methods (artificial measurements) do not provide information useful/required for the environmental or human safety risk assessment. The category "others non-relevant categories" covers a wide range of scientific publications which are not related to glyphosate or its metabolites or are not related to exposure of humans or the environment to glyphosate or its metabolites and thus not relevant for the risk assessments.

The full outcome of the relevant articles after full-text assessment is provided in Table 2.

Table 2: Relevant articles by full text level – according to the EFSA GD, Point 5.4.1

Section	Relevant articles by full-text (EFSA GD, Point 5.4.1)*		
	Category A*	Category B*	Category C*
Ecotoxicology	10	135	3
E-fate	97+1**	73	0
Residues	11	19	10
Toxicology	60	265	6
Total	178+1**	492	19

*Category A = relevant articles, Category B = relevant but supplementary articles, Category C = articles of unclear relevance.

** One e-fate entry (+1) is an erratum to the respective e-fate article.

2 Introduction

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA Guidance document EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG) on how to present the literature search in the dossier has been followed. Please refer to Appendix 1 (page 283) for more details.

The objective of the literature search was to identify and assess scientific peer-reviewed open literature published within the 10 years prior to the dossier submission date for relevance in the risk assessment of glyphosate and its metabolites regarding toxicity, ecotoxicity, environmental and consumer risk as specified in Article 8(5) of Regulation (EC) No 1107/2009.

The search has been conducted via the online service provider STN (www.stn-international.de) that provides access to a broad range of databases and to published research, journal literature, patents, structures, sequences, properties, and other data.

To offer a comprehensive literature search covering the requirements of the EFSA Guidance Document eleven databases have been used: AGRICOLA, BIOSIS, CABA, CAPLUS, EMBASE, ESBIODBASE, MEDLINE, TOXCENTER, FSTA, PQSCITECH, and SCISEARCH.

Due to a large amount of public literature available for the active substance glyphosate, the search has been divided into six parts. Please refer to Table 3 for more details on the six searches.

Table 3: Overview of the searches conducted for glyphosate and its metabolites

Search	Performed for	Covering publication period	Conducted on
Part 0	glyphosate, AMPA, N-acetyl-AMPA and N-acetyl-glyphosate	Jan 2010 – Dec 2011	28 th Oct 2019
Part 1	glyphosate, AMPA, N-acetyl-AMPA and N-acetyl-glyphosate	Jan 2012 – Dec 2017	08 th Jun 2018.
Part 2a	glyphosate, AMPA, N-acetyl-AMPA and N-acetyl-glyphosate	Jan 2018 – Dec 2018	04 th Jul 2019
Part 2b		Jan 2019 – Jun 2019	10 th Jul 2019
Part 3	glyphosate, AMPA, N-acetyl-AMPA and N-acetyl-glyphosate	Jul 2019 – Dec 2019	7 th Jan 2020
Part 4	HMPA	Jan 2010 – Feb 2020	24 th Feb 2020
Part 5a	N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA	Jan 2010 – Feb 2020	27 th Feb 2020
Part 5b	methylphosphonic acid	Jan 2010 – Feb 2020	27 th Feb 2020
Part 6	N-methylglyphosate	Jan 2010 – April 2020	04 th May 2020

AMPA = (aminomethyl)phosphonic acid

HMPA = (hydroxymethyl)phosphonic acid

As the number of records returned by a “single concept search”⁴ was extremely large for the searches Part 0, Part 1, Part 2, Part 3 and Part 5b a “focused search for grouped data requirements”⁵ have been performed (a combination of a substance search and “search filters” defined for the four relevant sections – ecotoxicology, toxicology, environmental fate, and residues).

A “single concept search” was used for the searches Part 4, Part 5a and Part 6.

Regarding details on the bibliographic databases used in the literature searches, please refer to Table 4 below.

Regarding the number of articles retrieved for all six searches, please refer to Table 5.

For the full outcome of the literature search for the individual technical sections, please refer to Chapter 3 (page 25).

⁴ Definition by the EFSA GD document: single concept search = using the active substance names and its synonyms.

⁵ Citation from the EFSA GD: *If the number of summary records returned by a single concept search is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

2.1 Bibliographic databases used in the literature review

Table 4: Overview of the databases used in the literature review

Data requirement(s) captured in the search	Details of the searches			
	1. AGRICOLA	2. BIOSIS	3. CABA	4. CAPLUS
Justification for choosing the source:	Provides literature from agriculture and related fields, e.g. biology, biotechnology, botany, ecology etc.	Provides the most comprehensive and largest life science literature, e.g. biosciences, biomedicine etc.	Provides literature from agriculture and related sciences, e.g. biotechnology, forestry, veterinary medicine etc.	Provides literature from chemistry and related fields, e.g. biochemistry, chemical engineering etc.
Number of records in the database at the time of search:	Part 1: > 5.7 million (06/2017); Part 2: > 6.1 million (05/2018); Part 0, 3, 4, 5a&b, 6: > 6.7 million (09/2019)	Part 1: > 25.7 million (03/2017); Part 0, 2, 3, 4, 5a&b, 6: > 27.8 million (04/2019)	Part 1: > 8.6 million (06/2017); Part 0, 2, 3, 4, 5a&b, 6: > 8.9 million (05/2018)	Part 1: > 45 million (03/2017); Part 2: > 48.7 million (11/2017); Part 0, 3, 4, 5a&b, 6: > 50.7 million (08/2019)
Database update:	Monthly	Weekly	Weekly	Daily updates bibliographic data; weekly updates indexing data
Date of the search:	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May
Database covers records:	1970-present	1926-present	1973-present	1907-present and more than 180,000 pre-1907
Date of the latest database update:	Part 0: 4 Oct 2019; Part 1: 5 Jun 2018; Part 2a&b: 3 Jul 2019; Part 3: 4 Dec 2019; Part 4: 8 Jan 2020; Part 5a&b: 8 Jan 2020; Part 6: 2 Apr 2020	Part 0: 23 Oct 2019; Part 1: 6 Jun 2018; Part 2a&b: 3 & 10 Jul 2019; Part 3: 1 Jan 2020; Part 4: 19 Feb 2020; Part 5a&b: 26 Feb 2020; Part 6: 29 Apr 2020	Part 0: 23 Oct 2019; Part 1: 6 Jun 2018; Part 2a&b: 3 & 10 Jul 2019; Part 3: 18 Dec 2019; Part 4: 19 Feb 2020; Part 5a&b: 26 Feb 2020; Part 6: 30 Apr 2020	Part 0: 27 Oct 2019; Part 1: 7 Jun 2018; Part 2a&b: 7 & 9 Jul 2019; Part 3: 6 Jan 2020; Part 4: 23 Feb 2020; Part 5a&b: 25 Feb 2020; Part 6: 3 May 2020
Language limit:	No	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are listed below.			
Total number of records retrieved:	Part 0: 412; Part 1: 1483; Part 2: 494; Part 3: 181; Part 4: 4; Part 5a&b: 0&91; Part 6: 6	Part 0: 583; Part 1: 2216; Part 2: 792; Part 3: 224; Part 4: 10; Part 5a&b: 1&150; Part 6: 6	Part 0: 1018; Part 1: 3418; Part 2: 669; Part 3: 377; Part 4: 3; Part 5a&b: 0&36; Part 6: 16	Part 0: 899; Part 1: 3036; Part 2: 809; Part 3: 339; Part 4: 28; Part 5a&b: 4&616; Part 6: 27

Table 4: Overview of the databases used in the literature review (continued)

Data requirement(s) captured in the search		Details of the searches		
		5. MEDLINE	6. EMBASE	7. TOXCENTER
Justification for choosing the source:		Provides literature from every area of medicine.	Provides literature from biomedical and pharmaceutical fields, e.g. bioscience, biochemistry, human medicine, forensic science, paediatrics, pharmacy, pharmacology, drug therapy, psychiatry, public health, biomedical engineering, environmental science.	Provides literature on pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals.
Number of records in the database at the time of search:		Part 1: > 27.1 million (04/2017); Part 2: > 28.7 million (08/2018); Part 0, 3, 4, 5a&b, 6: > 30 million (08/2019)	Part 1: > 32.7 million (07/2017); Part 2: > 34.3 million (08/2018); Part 0, 3, 4, 5a&b, 6: > 36.4 million (08/2019)	Part 1: > 12.9 million (04/2017); Part 2: > 13.6 million (08/2018); Part 0, 3, 4, 5a&b, 6: > 14.4 million (08/2019)
Database update:		Six times each week, with an annual reload	Daily	Weekly
Date of the search:		Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May
Database covers records:		1946-present	1974-present	1907-present
Date of the latest database update:		Part 0: 27 Oct 2019; Part 1: 7 Jun 2018; Part 2a&b: 7 & 9 Jul 2019; Part 3: 6 Jan 2020; Part 4: 23 Feb 2020; Part 5a&b: 26 Feb 2020; Part 6: 3 May 2020	Part 0: 25 Oct 2019; Part 1: 7 Jun 2018; Part 2a&b: 5 & 9 Jul 2019; Part 3: 6 Jan 2020; Part 4: 20 Feb 2020; Part 5a&b: 26 Feb 2020; Part 6: 1 May 2020	Part 0: 21 Oct 2019; Part 1: 4 Jun 2018; Part 2a&b: 1 & 8 Jul 2019; Part 3: 6 Jan 2020; Part 4: 18 Feb 2020; Part 5a&b: 25 Feb 2020; Part 6: 27 Apr 2020
Language limit:		No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":		Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:		Details are listed below.		
Total number of records retrieved:		Part 0: 249; Part 1: 1188; Part 2: 573; Part 3: 185; Part 4: 12; Part 5a&b: 1&198; Part 6: 7	Part 0: 335; Part 1: 1390; Part 2: 628; Part 3: 159; Part 4: 22; Part 5a&b: 1&426; Part 6: 7	Part 0: 738; Part 1: 2935; Part 2: 993; Part 3: 381; Part 4: 19; Part 5a&b: 4&353; Part 6: 19

Table 4: Overview of the databases used in the literature review (continued)

Data requirement(s) captured in the search	Details of the searches			
	8. FSTA	9. PQSCITECH	10. ESBIOWASE	11. SCISEARCH
Justification for choosing the source:	Provides literature on scientific and technological aspects of the processing and manufacture of human food products, e.g. biotechnology, hygiene and toxicology, engineering etc.	Provides a valuable and huge resource of literature (merge of 25 STN databases) from all science areas and technology; from engineering to lifescience.	Provides comprehensive literature on entire spectrum of biological and biosciences research, e.g. microbiology, biotechnology, ecological & environmental sciences, genetics, plant and crop science, toxicology and many more.	Provides one of the largest multidisciplinary scientific literature covering a broad field of sciences, technology, and biomedicine.
Number of records in the database at the time of search:	Part 1: > 1.3 million (06/2017); Part 0, 2, 3, 4, 5a&b, 6: > 1.4 million (07/2018)	Part 1: > 32 million (07/2017); Part 0, 2, 3, 4, 5a&b, 6: > 32 million (07/2017)	Part 1: > 7.2 million (05/2017); Part 0, 2, 3, 4, 5a&b, 6: > 7.6 million (07/2018)	Part 1: > 43 million (08/2017); Part 2: > 45 million (08/2018); Part 0, 3, 4, 5a&b, 6: > 47.7 million (08/2019)
Database update:	Weekly	Monthly	Weekly	Weekly
Date of the search:	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May	Part 0: 28 Oct 2019; Part 1: 8 Jun 2018; Part 2a&b: 8 & 10 Jul 2019; Part 3: 7 Jan 2020; Part 4: 24 Feb 2020; Part 5a&b: 27 Feb 2020; Part 6: 4 May
Database covers records:	1969-present	1962-present	1994-present	1974-present
Date of the latest database update:	Part 0: 24 Oct 2019; Part 1: 7 Jun 2018; Part 2a&b: 4 Jul 2019; Part 3: 19 Dec 2019; Part 4, 5a&b: 21 Feb 2020; Part 6: 30 Apr 2020	Part 0: 19 Sep 2019; Part 1: 30 May 2018; Part 2a&b: 4 Jul 2019; Part 3: 17 Dec 2019; Part 4: 31 Jan 2020; Part 5a&b: 26 Feb 2020; Part 6: 28 Apr 2020	Part 0: 23 Oct 2019; Part 1: 7 Jun 2018; Part 2a&b: 3 Jul 2019; Part 3: 7 Jan 2020; Part 4: 19 Feb 2020; Part 5a&b: 26 Feb 2020; Part 6: 29 Apr 2020	Part 0: 22 Oct 2019; Part 1: 4 Jun 2018; Part 2a&b: 1 & 8 Jul 2019; Part 3: 30 Dec 2019; Part 4: 21 Feb 2020; Part 5a&b: 25 Feb 2020; Part 6: 27 Apr 2020
Language limit:	No	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are listed below.			
Total number of records retrieved:	Part 0: 33; Part 1: 176; Part 2: 52; Part 3: 27; Part 4: 1; Part 5a&b: 0&2; Part 6: 2	Part 0: 468; Part 1: 1043; Part 2: 169; Part 3: 100; Part 4: 3; Part 5a&b: 0&72; Part 6: 6	Part 0: 390; Part 1: 1421; Part 2: 566; Part 3: 163; Part 4: 10; Part 5a&b: 1&58; Part 6: 8	Part 0: 815; Part 1: 3236; Part 2: 1155; Part 3: 370; Part 4: 22; Part 5a&b: 1&329; Part 6: 12

Table 5: Total number of articles retrieved for all six searches

	After automatic removal of duplicates within the databases	After applying search filters*	After merge of all six searches and removal of duplicates
Part 0 (Jan 2010 – Dec 2011) glyphosate, AMPA, N-acetyl-AMPA, N-acetyl-glyphosate	N = 1956	N = 1911	Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print. N= 11326
Part 1 (Jan 2012 – Dec 2017) glyphosate, AMPA, N-acetyl-AMPA, N-acetyl-glyphosate	N = 7123	N = 7031	
Part 2 (Jan 2018 – Jun 2019) glyphosate, AMPA, N-acetyl-AMPA, N-acetyl-glyphosate	N = 2097	N = 2083	
Part 3 (Jul 2019 – Dec 2019) glyphosate, AMPA, N-acetyl-AMPA, N-acetyl-glyphosate	N = 1372	N = 1364	
Part 4 (Jan 2010 – Feb 2020) HMPA	N = 58	Due to the low number of hits, search filters have not been applied; thus N = 58.	
Part 5a (Jan 2010 – Feb 2020) N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA	N = 4	Due to the low number of hits, search filters have not been applied, thus N = 4.	
Part 5b (Jan 2010 – Feb 2020) methylphosphonic acid	N = 1051	N = 1018	
Part 6 (Jan 2010 – Apr 2020) N-methylglyphosate	N = 46	Due to the low number of hits, search filters have not been applied, thus N = 46.	
Total number of hits	N = 13707	N = 13515	

* Search filters applied for the four technical sections (residues, environmental fate, toxicology and ecotoxicology). Please refer to Chapter 2.3 for more details (page 15).

2.2 Input parameters for the literature search

The basic input parameters used in the literature search, e.g. IUPAC, chemical name or CAS number are provided in Table 6 - Table 15.

Table 6: Input parameters – active substance Glyphosate

Substance name	Glyphosate Salts: isopropylamine, potassium, ammonium, methylmethanamine
IUPAC / CA name	2-(phosphonomethylamino)acetic acid
CAS number(s)	1071-83-6 Salts: 38641-94-0, 70901-12-1, 39600-42-5, 69200-57-3, 34494-04-7, 114370-14-8, 40465-66-5, 69254-40-6

Table 7: Input parameters – metabolite AMPA

Substance name	AMPA
IUPAC / CA name	(aminomethyl)phosphonic acid
CAS number(s)	1066-51-9

Table 8: Input parameters – metabolite N-acetyl glyphosate

Substance name	N-acetyl glyphosate
IUPAC / CA name	N-acetyl-N-(phosphonomethyl)glycine
CAS number(s)	129660-96-4

Table 9: Input parameters – metabolite N-acetyl AMPA

Substance name	N-acetyl AMPA
IUPAC / CA name	[(acetylamino)methyl]phosphonic acid
CAS number(s)	57637-97-5

Table 10: Input parameters – metabolite HMPA

Substance name	HMPA
IUPAC / CA name	(hydroxymethyl)phosphonic acid
CAS number(s)	2617-47-2

Table 11: Input parameters – metabolite N-methyl AMPA

Substance name	N-methyl AMPA
IUPAC / CA name	[(methylamino)methyl]phosphonic acid
CAS number(s)	35404-71-8

Table 12: Input parameters – metabolite N-glyceryl AMPA

Substance name	N-glyceryl AMPA
IUPAC / CA name	(2,3-dihydroxypropanoylamino)methylphosphonic acid
CAS number(s)	No data

Table 13: Input parameters – metabolite N-malonyl AMPA

Substance name	N-malonyl AMPA
IUPAC / CA name	3-oxo-3-(phosphonomethylamino)propanoic acid
CAS number(s)	no data

Table 14: Input parameters – metabolite methylphosphonic acid

Substance name	methylphosphonic acid
IUPAC / CA name	methylphosphonic acid
CAS number(s)	993-13-5

Table 15: Input parameters – metabolite N-methylglyphosate

Substance name	N-methylglyphosate
IUPAC / CA name	2-[methyl(phosphonomethyl)amino]acetic acid
CAS number(s)	24569-83-3

2.3 Endpoint specific search terms

The approach used for the searches was either the “single concept search”⁶ (in searches Part 4, 5a and 6) or the “focused search for grouped data requirements”⁷ (in searches Part 0, 1, 2, 3, 5b), which combines the active substance / metabolites keywords with the search filters used in the technical sections. Please refer to Table 16 for more details on the keywords used and to Table 17 - Table 20 for the search filters.

Table 16: Keywords used for the active substance glyphosate and its metabolites

Gly1: Glyphosate and AMPA	glyphosat? OR glifosat? OR glyfosat? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR aminomethyl phosphonic OR aminomethylphosphonic OR 1066-51-9
Gly2: N-acetyl glyphosate and N-acetyl AMPA	2 acetyl phosphonomethyl amino acetic acid OR n acetyl glyphosate OR n acetylglyphosate OR n acetyl n phosphonomethyl glycine OR 129660-96-4 OR n acetyl ampa OR acetyl amino methyl phosphonic acid OR acetylaminomethyl phosphonic acid OR 57637-97-5
HMPA	2617-47-2 OR hydroxymethanephosphonic acid OR hydroxymethyl phosphonate OR hydroxymethylphosphonate OR hydroxymethyl phosphonic acid OR hydroxymethylphosphonic acid OR methanhydroxyphosphonic acid OR phosphonic acid(1w)hydroxymethyl OR phosphonomethanol
N-methyl AMPA	35404-71-8 OR methylamino methyl phosphonic acid OR methylaminomethyl phosphonic acid OR methylaminomethylphosphonic acid OR n methyl ampa OR nsc 244826 OR phosphonic acid methylamino methyl OR phosphonic acid p methylamino methyl
N-glyceryl AMPA	2 3 dihydroxy 1 oxopropyl aminomethyl phosphonic acid OR 2 3 dihydroxy 1 oxopropyl aminomethylphosphonic acid OR n glyceryl ampa
N-malonyl AMPA	3 oxo 3 phosphonomethyl amino propanoic acid or 3 oxo 3 phosphonomethyl aminopropanoic acid or n malonyl ampa
methylphosphonic acid	993-13-5 OR dihydrogen methylphosphonate OR methanephosphonic acid OR methyl phosphonic acid OR methylphosphonic acid OR nsc 119358 OR phosphonic acid methyl OR phosphonic acid p methyl
N-methylglyphosate (NMG)	24569-83-3 OR 2 methyl phosphonomethyl amino acetic acid OR 2 methyl phosphonomethyl aminoacetic acid OR acetic acid 2 n methyl n phosphonatomethyl amino OR glycine n methyl n phosphonomethyl OR glyphosate n methyl OR methyl glyphosate OR methyl phosphonomethyl amino acetic acid OR methyl phosphonomethyl aminoacetic acid OR n methyl n phosphonomethyl glycine OR n methylglyphosate OR n phosphonomethyl n methyl glycine OR n phosphonomethyl n methylglycine

(1w) = proximity operator (this order, up to 1 word between)

⁶ Definition by the EFSA GD document: single concept search = using the active substance names and its synonyms.

⁷ Citation from the EFSA GD: *If the number of summary records returned by a single concept search is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

Table 17: Search filters related to the technical section toxicology

Toxicology Gly1 OR Gly2 AND the following search filters; methyl phosphonic acid AND the following search filters
tox? OR hazard? OR adverse OR health OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR in vivo OR in vitro OR invivo OR invitro OR mode of action OR skin? OR eye? OR irrit? OR sensi? OR allerg? OR rat OR rats OR dog? OR rabbit? OR guinea pig? OR mouse OR mice OR metabolism OR metabolite? OR metabolic OR distribution OR adsorption OR excretion OR elimination OR kinetic OR cytochrome OR enzym? OR gen? OR muta? OR chromos? OR clastogen? OR DNA OR carcino? OR cancer? OR tumor? OR tumour? OR oncog? OR oncol? OR malign? OR immun? OR neur? OR endocrin? OR hormon? OR gonad? OR disrupt? OR reproduct? OR development? OR malform? OR anomal? OR fertil? OR foet? OR fet? OR matern? OR pregnan? OR embryo? OR epidem? OR medical? OR poison? OR exposure OR operator? OR bystander? OR resident? OR worker? OR occupat? biomonitoring OR human exposure OR microbiome OR oxidative stress OR apoptosis OR necrosis OR cytotoxicity OR Polyoxyethyleneamine OR POEA OR surfactant OR risk assessment?

Table 18: Search filters related to the technical section residues

Residues Gly1 OR Gly2 AND the following search filters; methyl phosphonic acid AND the following search filters
uptake OR translocation OR rumen OR storage stability OR storage OR stability OR metabolic OR metabolism OR breakdown OR nature of residues OR residue? OR magnitude of residues OR process? OR effects of processing OR dessicant OR preharvest OR preemerg? OR ?resistant? OR ?toleran? OR transgenic OR hydroly? OR rotation? OR succeed? OR plant? OR crop? OR feed? OR animal? OR livestock? OR hen OR cattle OR ruminant? OR goat? OR cow? OR pig? OR dietary OR assessment OR risk assessment OR consum? OR exposure

Table 19: Search filters related to the technical section environmental fate

Environmental fate Gly1 OR Gly 2 AND the following search filters; methyl phosphonic acid AND the following search filters
soil OR water OR sediment OR degradat? OR photo? OR soil residues OR soil accumulat? OR soil contaminat? OR mobility OR sorption OR column leaching OR aged residue OR leach? OR lysimeter OR groundwater OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR transport OR micronutrient OR phosphate OR iron OR manganese OR half-life OR halflife OR half-lives OR halflives OR DT50 OR kinetics OR off-site movement OR removal OR drinking water OR water treatment processes OR atmospheric deposition OR tile-drains OR surface water OR monitoring data OR disinfectant OR ozone OR tillage OR infiltration OR hard surface OR rainwater OR rain water OR chelat? OR complex? OR mineralization OR persistence OR ligand

Table 20: Search filters related to the technical section ecotoxicology

Ecotoxicology Gly1 or Gly 2 AND the following search filters; methyl phosphonic acid AND the following search filters
tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR plant AND submerge? OR emerge? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator OR solitary OR alg? OR aquatic OR freshwater OR vertebrat? OR mammal? OR rat OR mouse OR mice OR rabbit OR hare OR protection OR model? OR vole OR pest OR arthropod? OR beneficials OR typhlodromus OR aphidius OR parasitoid OR predator OR chrysoperla OR Orius OR spider OR worm? OR ?worm OR Eisenia OR soil OR collembol? OR macro organism OR folsomia OR springtail OR decompos? OR micro organisms OR microorganisms OR microbial OR carbon OR nitrogen OR plant? OR vegetative vigo? OR seedling OR germination OR monocot? OR dicot? OR sewage OR activated sludge OR biodegrad? OR bioaccumulation? OR amphib? OR reptile? OR aquatic plant OR beneficial

2.4 Relevance assessment

After combination of all six searches and removal of duplicates, the remaining articles were assessed for their relevance at title / abstract level (so-called rapid assessment, see 2.4.1 and 2.4.3). Articles that were identified as “non-relevant” in the rapid assessment were excluded from further evaluation. For articles that were not excluded in the rapid assessment, full-text documents were reviewed (detailed assessment, see 2.4.2 and 2.4.3).

2.4.1 Relevance assessment at “title / abstract” level

2.4.1.1 Criteria applied for “non-relevance” at “title / abstract” level

Articles identified as “non-relevant” in the rapid assessment belong to one of the following categories. These articles were excluded from further evaluation.

- Publications related to efficacy (resistance related articles, new uses of control of pest/crops) or to agricultural / biological research (crop science, breeding, fertilization, tillage, fundamental plant physiology / micro / molecular biology).
- Publications dealing with analytical methods / development.
- Publications describing new methods of synthesis (discovery / developments) or other aspects of basic (organic / inorganic) chemistry.
- Patents.
- Wastewater treatment.
- Abstracts referring to a conference contribution that does not contain sufficient data / information for risk assessment.
- Publications focusing on genetically modified organisms / transgenic crops; no data directly relevant to glyphosate evaluation (e.g. crop compositional analysis, gene flow, protein characterization).
- Publications where glyphosate or a relevant metabolite were not the focus of the paper.
- Secondary information including scientific and regulatory reviews⁸.
- Articles dealing with political / socio / economic analysis.
- Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity).
- Study design, test system, species tested, exposure routes etc. are not relevant for the European regulatory purposes.
- Findings not related to ecotoxicology, toxicology, metabolism, environmental fate.
- Publications not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.).

⁸ Reviews have been partly evaluated on full text level as well – case by case decision.

2.4.2 Relevance assessment at “full-text” level

For articles that were not excluded in the rapid assessment, full-text documents have been reviewed (detailed assessment).

2.4.2.1 Criteria applied for “non-relevance” at “full-text” level

Articles that have been identified as “non-relevant” in the detailed assessment belong to one of the following categories:

- Publications dealing with a Roundup formulation that is not the representative formulation for the AIR5 dossier in Europe.
- Publications dealing with general pesticide exposures (not glyphosate specific).
- The presented endpoints are not relatable to the EU level risk assessment.
- Opinion articles where no new data is provided that can be used for risk assessment.
- Findings based on cellular and molecular level that cannot be related to the risk assessment.
- Criteria outlined in Section 2.4.1.1, that needed the full text document to determine.

2.4.3 Selection and review process for articles on the health and exposure of glyphosate

The scientific literature on the health effects of glyphosate can be subdivided in two main parts:

- Articles containing data on glyphosate acid and salts and on the reference glyphosate formulation MON 52276, and
- Articles only containing data on glyphosate formulations and/or co-formulants that have a composition different from that of the reference formulation MON 52276.

In the case of articles only relating to glyphosate formulations *in vitro* testing with the exception of cell/tissue systems⁹ that are likely to come in direct contact with formulations and glyphosate formulations containing other active ingredients are excluded. The reason for the exclusion of *in vitro* testing of formulations to assess health effects as a result of systemic exposure is the presence of surfactants which produce cell toxicity based on the destabilization of the cell membrane and the mitochondrial membrane thus masking the specific toxicity of glyphosate. The toxicity of the co-formulants in combination with glyphosate is dependent on the concentration and the nature of the co-formulants and can be addressed on a case-by-case basis during the registration process of specific formulations.

In the relevance of glyphosate data, those articles have been considered as not relevant (and reliable) for the assessment for systemic toxicity when only *in vitro* results are presented with glyphosate concentrations beyond 1 mM. This is because it is physiologically not possible to attain such concentrations in standard regulatory *in vivo* testing due to the limited oral bioavailability (approx. 20%), very low dermal absorption, and rapid systemic elimination of glyphosate in *in vivo* test systems. It thus makes no sense to include such data in the risk assessment of glyphosate. Exceptions can be made in the event of direct contact with formulations resulting in localized effects, but then there is the contribution of the toxicity of the co-formulants which can be better addressed in the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

⁹ Glyphosate-based herbicides (GBH) contain surfactants that destabilize the cell membrane and the mitochondrial membrane and thus produce a toxicity that is not representative for glyphosate (see Levine S. L. et al, *Cell Biol. Toxicol.* (2007) 23:385-400). This has been clearly demonstrated in the scientific literature and also in some papers reviewed for this submission where *in vitro* glyphosate toxicity is compared against that of GBH and surfactants.

The limit of 1 mM has been based on the single dose oral pharmacokinetic data of a formulation containing 71.7% w/w glyphosate where an oral dose of 1,430 mg/kg bw in the rat gives plasma levels of 38.1 µg/mL or 0.225 mM after 2 hours. When extrapolated linearly (which is possible for glyphosate because it is not subject to hepatic metabolism) this gives plasma levels of 53.3 µg/mL or 0.315 mM at 2 hours after oral intake of 2,000 mg/kg bw and 107 µg/mL or 0.630 mM at 2 hours after oral intake of 4,000 mg/kg bw. A systemic concentration of glyphosate of 1 mM would then represent an oral dose of more than 6,000 mg/kg bw which is completely unreasonable for repeat dose experimental *in vivo* testing under today's OECD test guidelines. The ADI for glyphosate of 0.5 mg/kg bw/day corresponds with a daily systemic concentration of 0.17 µg/mL or 1 µM when a 60 kg person with 36 L extracellular fluid is considered with a glyphosate oral bioavailability of 20%. The daily systemic dose of glyphosate on the day of application (i.e. highest exposure day), based on the geometric mean of 3.2 µg/L in urine, of glyphosate applicators in the US is approx. 0.0001 mg/kg bw/day (Acquavella, 2004¹⁰) which is 1000 times less than the systemic dose (0.1 mg/kg bw) corresponding with the ADI oral dose of 0.5 mg/kg bw with 20% oral bioavailability.

Many articles that have been considered relevant for the risk assessment of glyphosate and have been assessed for reliability on full text basis contain experimental data as well on glyphosate as such as on formulations (different from MON 52276) and co-formulants. In such case only the toxicology data pertinent to glyphosate and to the reference formulation (if that can be clearly stated by the author of the article) are summarized and discussed. In the case of articles on exposure monitoring and epidemiology, exposure to glyphosate formulations are considered.

2.4.4 Categorization of “relevant” articles at full text level

Articles that have been identified as “relevant” in the rapid assessment have been categorized as recommended in the EFSA GD 2011; 9(2):2092, Point 5.4.1.

- Category (a) Studies that provide data for establishing or refining risk assessment parameters. These studies should be summarised in detail following the subsequent steps of the OECD Guidance documents (OECD, 2005; 2006) and should be considered for reliability.
- Category (b) Studies that are relevant to the data requirement, but in the opinion of the applicant provide only supplementary information that does not alter existing risk assessment parameters. After expert judgement, essential reliability parameters affect the full reliability of the study. A justification for such a decision should be provided.
- Category (c) Studies for which relevance cannot be clearly determined. For each of these studies the applicants should provide an explanation of why the relevance of such studies could not be definitively determined.

The list of category A articles can be found in Table 32 and Table 33. The list of category B articles and the justifications can be found in Table 34 and Table 35. The list of category C articles and the explanations can be found in Table 36 and Table 37.

¹⁰ Acquavella J. F. et al. (2004), Environmental Health Perspectives, 112(3), 321-326.

2.5 Reliability assessment

For articles, which have been identified as category A, under the Point 5.4.1 of the EFSA GD document, a reliability assessment has been performed. The reliability criteria for each technical section are summarized in Table 21 - Table 23.

For articles (category A) that have been identified as reliable or reliable with restrictions, summaries have been compiled. These summaries are presented in the MCA / MCP parts of the respective dossier section. Articles of category A which have been identified as non-reliable were downgraded to articles of category B (relevant but supplementary).

Table 21: Reliability criteria for ecotoxicology, environmental fate and residues

Applied for	Reliability criteria
Ecotoxicology, Environmental Fate, Residues	For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines are met.
Ecotoxicology, Environmental Fate, Residues	(No) previous exposure to other chemicals is documented (where relevant).
Ecotoxicology	For aquatic studies, the test substance is dissolved in water or where a carrier is required, it is appropriate (non-toxic) and a carrier control / positive control is considered in the test design.
Environmental Fate, Residues	The test substance is dissolved in water or non-toxic solvent.
Ecotoxicology, Environmental Fate, Residues	Test item is sufficiently documented, and reported (i.e. purity, source, content, storage conditions).
Ecotoxicology	For tests including vertebrates, compliance of the batches used in toxicity studies compared to the technical specification.
Ecotoxicology	Species used in the experiment are clearly reported, including source, experimental conditions (where relevant): strain, adequate age/life stage, body weight, acclimatization, temperature, pH, oxygen (dissolved oxygen for aquatic tests) content, housing, light conditions, humidity (terrestrial species) incubation conditions, feeding.
Ecotoxicology	The validity criteria from relevant test guidelines can be extrapolated across different species but not necessarily across different test designs. If different, then the nature of the difference and impact should ideally be discussed.
Ecotoxicology, Environmental Fate, Residues	Only glyphosate or its metabolites is the test substance (excluding mixture), and information on application of the test substance is described.
Ecotoxicology, Environmental Fate, Residues	The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite).
Ecotoxicology, Environmental Fate, Residues	Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
Ecotoxicology, Environmental Fate, Residues	Analytical verifications performed in test media (concentration) / collected samples, stability of the test substance in test medium should be documented.
Ecotoxicology	The test has been performed in several dose levels (at least 3) including a positive / negative control where relevant.
Ecotoxicology	Suitable exposure throughout the whole exposure period was demonstrated and reported.
Ecotoxicology	A clear concentration response relationship is reported – in studies where the dose response test design is employed.
Ecotoxicology	A sufficient number of animals per group to facilitate statistical analysis reported: mortality in control groups reported, observations/findings in positive/negative control clearly reported (where relevant).
Ecotoxicology, Environmental Fate, Residues	Assessment of the statistical power of the assay is possible with reported data.
Ecotoxicology, Environmental Fate, Residues	Statistical methodology is reported (e.g., checking the plots and confidence intervals).

Applied for	Reliability criteria
Ecotoxicology	Description of the observations (including time-points), examinations, and analyses performed, with (where relevant) dissections being well documented.
Ecotoxicology	For terrestrial ecotoxicological studies in the laboratory or the field, the substrates used should be adequately described e.g. nature of substrate i.e. species of leaf or soil type.
Ecotoxicology, Environmental Fate, Residues	Field locations relevant / comparable to European conditions.
Ecotoxicology, Environmental Fate, Residues	Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon).
Ecotoxicology, Environmental Fate	Other soils where information on characterization by the parameters: pH, texture, CEC, organic carbon, bulk density, water holding capacity, microbial biomass.
Ecotoxicology, Environmental Fate, Residues	For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year.
Ecotoxicology, Environmental Fate	For soil samples, sampling from A-horizon, top 20 cm layers; soils freshly from field preferred (storage max 3 months at 4 +/- 2°C).
Ecotoxicology, Environmental Fate, Residues	Data on precipitation is recorded.
Environmental Fate	The temperature was in the range between 20-25°C and the moisture was reported.
Environmental Fate	The presence of glyphosate identified in samples were collected from European groundwater, soil, surface waters, sediments or air.
Ecotoxicology	For lab terrestrial studies, the temperature was appropriate to the species being tested and generally should fall within the range between 20-25°C and soil moisture / relative humidity was reported.
Ecotoxicology	For bee studies, temperature of the study should be appropriate to species.
Ecotoxicology	For lab aquatic studies:
	The source and / or composition of the media used should be described.
	The temperature of the water should be appropriate to the species being tested and generally fall within the 15-25°C.
Ecotoxicology, Residues	The residue data can be linked to a clearly described GAP table, appropriate in the context of the renewal of approval of glyphosate (crop, application method, doses, intervals, PHI).
Ecotoxicology, Environmental Fate, Residues	Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate, and where relevant its metabolites.
Ecotoxicology, Environmental Fate, Residues	Analytical methods are clearly described; and adequate statement of specificity and sensitivity of the analytical methods is included.
Ecotoxicology	Assessment of the ECX for the width of the confidence interval around the median value; and the certainty on the level of protection offered by the median ECX is reported.
Environmental Fate	Radiolabel characterization: purity, specific activity, location of label is reported.
Environmental Fate	If degradation kinetics are included: data tables / model description / statistical parameters for kinetic fit to be provided.
Environmental Fate, Residues	Monitoring data: description of matrix analysed, and analytical methods to be fully described.
Environmental Fate	Clear description of application rate and relevance to approved uses.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 22: Reliability criteria for toxicology – epidemiology and exposure studies

Reliability criteria – toxicology	
Epidemiology studies	Exposure studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines/practices	Study in accordance to valid internationally accepted testing guidelines/practices
Study completely described and conducted following scientifically acceptable standards	Study performed according to GLP
	Study completely described and conducted following scientifically acceptable standards
Test substance	Test substance
Exposure to formulations with only glyphosate as a.i.	Exposure to formulations with only glyphosate as a.i.
Exposure to formulations with glyphosate combined with other a.i.	Exposure to formulations with glyphosate combined with other a.i.
Exposure to various formulations of pesticides	Exposure to various formulations of pesticides
Study	Study
Study design – epidemiological method followed	Study design clearly described
Description of population investigated	Population investigated sufficiently described
Description of exposure circumstances	Exposure circumstances sufficiently described
Description of results	Sampling scheme sufficiently documented
Have confounding factors been considered	Analytical method described in detail
Statistical analysis	Validation of analytical method reported
	Monitoring results reported
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 23: Reliability criteria for toxicology – *in vitro* and *in vivo* studies

Reliability criteria – toxicology and metabolism	
<i>In vitro</i> studies	<i>In vivo</i> studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines	Study in accordance to valid internationally accepted testing guidelines.
Study performed according to GLP	Study performed according to GLP
Study completely described and conducted following scientifically acceptable standards	Study completely described and conducted following scientifically acceptable standards
Test substance	Test substance
Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions)	Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions)
Only glyphosate acid or one of its salts is the tested substance	Only glyphosate acid or one of its salts is the tested substance
AMPA is the tested substance	AMPA is the tested substance
Study	Study
Test system clearly and completely described	Test species clearly and completely described
Test conditions clearly and completely described	Test conditions clearly and completely described
Metabolic activation system clearly and completely described	Route and mode of administration described
Test concentrations in physiologically acceptable range (< 1 mM)	Dose levels reported
Cytotoxicity tests reported	Number of animals used per dose level reported
Positive and negative controls	Method of analysis described for analysis test media
Complete reporting of effects observed	Validation of the analytical method
Statistical methods described	Analytical verifications of test media
Historical negative and positive control data reported	Complete reporting of effects observed
Dose-effect relationship reported	Statistical methods described
	Historical control data of the laboratory reported
	Dose-effect relationship reported
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

3 SEARCH RESULTS

The full outcome of the literature search is provided below.

Table 24: Summary of the literature review – all technical sections

	Number	Justification
Total number of articles retrieved from all searches. ^{a)}	39482	n.a.
Total number of articles after removal of duplicates within all databases.	13707	n.a.
Total number of articles after merge of all searches ^{a)} and removal of duplicates. ^{b)}	11326	n.a.
Number of articles excluded after rapid assessment (title / abstract).	9784	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	1542	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	852	See Table 38
Number of articles not excluded after detailed assessment. ^{c)}	690	See Table 32-Table 37
Number of summaries presented in the dossier. ^{d)}	178+1 ^{e)}	See Table 32, Table 33

^{a)} After all searches: Part 0, 1, 2, 3, 4, 5a&b, 6.

^{b)} Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{c)} All articles belonging to the category A, B, C of the Point 5.4.1 (as stated in the EFSA GD document).

^{d)} Summaries presented in the dossier: articles classified as relevant (EFSA GD, Point 5.4.1, category A) & reliable or relevant (EFSA GD, Point 5.4.1, category A) & reliable with restrictions.

^{e)} One e-fate entry (+1) is an erratum to the respective article; no summary was compiled for the erratum, however to keep the statistics clear, the erratum is also mentioned here.

Table 25: Results of the article selection process for ecotoxicology

	Number	Justification
Total number of records after merge of all searches ^{a)} and removal of duplicates.	1464	n.a.
Number of articles excluded after rapid assessment (title / abstract).	918	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	546	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	398	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	148	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	10	See Table 32, Table 33

^{a)} After all searches: Part 0, 1, 2, 3, 4, 5a&b, 6.

^{b)} All articles belonging to the category A, B, C of the Point 5.4.1 (as stated in the EFSA GD document).

^{c)} Summaries presented in the dossier: articles classified as relevant (EFSA GD, Point 5.4.1, category A) & reliable or relevant (EFSA GD, Point 5.4.1, category A) & reliable with restrictions.

Table 26: Results of the article selection process for environmental fate

	Number	Justification
Total number of records after merge of all searches ^{a)} and removal of duplicates.	1062	n.a.
Number of articles excluded after rapid assessment (title / abstract).	759	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	303	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	132	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	171	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	97+1 ^{d)}	See Table 32, Table 33

^{a)} After all searches: Part 0, 1, 2, 3, 4, 5a&b, 6.

^{b)} All articles belonging to the category A, B, C of the Point 5.4.1 (as stated in the EFSA GD document).

^{c)} Summaries presented in the dossier: articles classified as relevant (EFSA GD, Point 5.4.1, category A) & reliable or relevant (EFSA GD, Point 5.4.1, category A) & reliable with restrictions.

^{d)} One e-fate entry (+1) is an erratum to the respective article; no summary was compiled for the erratum, however to keep the statistics clear, the erratum is also mentioned here.

Table 27: Results of the article selection process for residues

	Number	Justification
Total number of records after merge of all searches ^{a)} and removal of duplicates.	475	n.a.
Number of articles excluded after rapid assessment (title / abstract).	405	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	70	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	30	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	40	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	11	See Table 32, Table 33

^{a)} After all searches: Part 0, 1, 2, 3, 4, 5a&b, 6.

^{b)} All articles belonging to the category A, B, C of the Point 5.4.1 (as stated in the EFSA GD document).

^{c)} Summaries presented in the dossier: articles classified as relevant (EFSA GD, Point 5.4.1, category A) & reliable or relevant (EFSA GD, Point 5.4.1, category A) & reliable with restrictions.

Table 28: Results of the article selection process for toxicology

	Number	Justification
Total number of records after merge of all searches ^{a)} and removal of duplicates.	1454	n.a.
Number of articles excluded after rapid assessment (title / abstract).	831	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	623	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	292	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	331	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	60	See Table 32, Table 33

^{a)} After all searches: Part 0, 1, 2, 3, 4, 5a&b, 6.

^{b)} All articles belonging to the category A, B, C of the Point 5.4.1 (as stated in the EFSA GD document).

^{c)} Summaries presented in the dossier: articles classified as relevant (EFSA GD, Point 5.4.1, category A) & reliable or relevant (EFSA GD, Point 5.4.1, category A) & reliable with restrictions.

Table 29: Results of the article selection process for analytical methods

	Number	Justification
Total number of records after merge of all searches ^{a)} and removal of duplicates.	117	n.a.
Number of articles excluded after rapid assessment (title / abstract).	117	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After all searches: Part 0, 1, 2, 3, 4, 5a&b, 6.

^{b)} All articles belonging to the category A, B, C of the Point 5.4.1 (as stated in the EFSA GD document).

^{c)} Summaries presented in the dossier: articles classified as relevant (EFSA GD, Point 5.4.1, category A) & reliable or relevant (EFSA GD, Point 5.4.1, category A) & reliable with restrictions.

Table 30: Results of the article selection process for efficacy / agronomy

	Number	Justification
Total number of records after merge of all searches ^{a)} and removal of duplicates.	4324	n.a.
Number of articles excluded after rapid assessment (title / abstract).	4324	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After all searches: Part 0, 1, 2, 3, 4, 5a&b, 6.

^{b)} All articles belonging to the category A, B, C of the Point 5.4.1 (as stated in the EFSA GD document).

^{c)} Summaries presented in the dossier: articles classified as relevant (EFSA GD, Point 5.4.1, category A) & reliable or relevant (EFSA GD, Point 5.4.1, category A) & reliable with restrictions.

Table 31: Results of the article selection process for “others” (e.g. synthesis, chemistry etc.)

	Number	Justification
Total number of records after merge of all searches ^{a)} and removal of duplicates.	2430	n.a.
Number of articles excluded after rapid assessment (title / abstract).	2430	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After all searches: Part 0, 1, 2, 3, 4, 5a&b, 6.

^{b)} All articles belonging to the category A, B, C of the Point 5.4.1 (as stated in the EFSA GD document).

^{c)} Summaries presented in the dossier: articles classified as relevant (EFSA GD, Point 5.4.1, category A) & reliable or relevant (EFSA GD, Point 5.4.1, category A) & reliable with restrictions.

Table 32: Relevant (category A) & reliable or reliable with restrictions articles after detailed assessment: sorted by data requirement(s)

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
49	CA 5.3	Gao H. et al.	2019	Activation of the N-methyl-D-aspartate receptor is involved in glyphosate-induced renal proximal tubule cell apoptosis.	Journal of applied toxicology (2019), Vol. 39, pp. 1096	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
78	CA 5.3	Kumar S. et al.	2014	Glyphosate-rich air samples induce IL-33, TSLP and generate IL-13 dependent airway inflammation.	Toxicology (2014), Vol. 325, pp. 42	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
100	CA 5.3	Mesnage R. et al.	2018	Comparison of transcriptome responses to glyphosate, isoxaflutole, quizalofop-p-ethyl and mesotrione in the HepaRG cell line.	Toxicology reports (2018), Vol. 5, pp. 819	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
104	CA 5.3	Milic M. et al.	2018	Oxidative stress, cholinesterase activity, and DNA damage in the liver, whole blood, and plasma of Wistar rats following a 28-day exposure to glyphosate.	Arhiv za higijenu rada i toksikologiju (2018), Vol. 69, No. 2, pp. 154	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
157	CA 5.3	Tang J. et al.	2017	Ion Imbalance Is Involved in the Mechanisms of Liver Oxidative Damage in Rats Exposed to Glyphosate.	Frontiers in physiology (2017), Vol. 8, pp. 1083	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
1	CA 5.4	Adler-Flindt S. et al.	2019	Comparative cytotoxicity of plant protection products and their active ingredients.	Toxicology In Vitro, (2019) Vol. 54, pp. 354	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
31	CA 5.4	da Silva Natara D. G. et al.	2019	Interference of goethite in the effects of glyphosate and Roundup® on ZFL cell line.	Toxicology in vitro (2020), Vol. 65, pp. 104755	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
37	CA 5.4	de Almeida, L. K. S. et al.	2018	Moderate levels of glyphosate and its formulations vary in their cytotoxicity and genotoxicity in a whole blood model and in human cell lines with different estrogen receptor status.	3 Biotech (2018), Vol. 8, No. 10, pp. 438	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
64	CA 5.4	Ilyushina N. A. et al.	2018	Comparative investigation of genotoxic activity of glyphosate technical products in the micronucleus test in vivo.	Toksikologicheskii Vestnik (2018), No. 4, pp. 24	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
65	CA 5.4	Ilyushina N. A. et al.	2019	Maximum tolerated doses and erythropoiesis effects in the mouse bone marrow by 79 pesticides' technical materials assessed with the micronucleus assay.	Toxicology Reports (2019), Vol. 6, pp. 105	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
73	CA 5.4	Kasuba V. et al.	2017	Effects of low doses of glyphosate on DNA damage, cell proliferation and oxidative stress in the HepG2 cell line.	Environmental science and pollution research international (2017), Vol. 24, No. 23, pp. 19267	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
76	CA 5.4	Koller V. J. et al.	2012	Cytotoxic and DNA-damaging properties of glyphosate and Roundup in human-derived buccal epithelial cells.	Archives of toxicology (2012), Vol. 86, No. 5, pp. 805	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
79	CA 5.4	Kwiatkowska M. et al.	2017	DNA damage and methylation induced by glyphosate in peripheral blood mononuclear cells (in vitro study)	Food and chemical toxicology (2017), Vol. 105, pp. 93	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
91	CA 5.4	Manas F. et al.	2013	Oxidative stress and comet assay in tissues of mice administered glyphosate and ampa in drinking water for 14 days.	Journal of Basic and Applied Genetics (2013), Vol. 24, No. 2, pp. 67	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
110	CA 5.4	Nagy K. et al.	2019	Comparative cyto- and genotoxicity assessment of glyphosate and glyphosate-based herbicides in human peripheral white blood cells.	Environmental research (2019), Vol. 179, No. Pt B, pp. 108851	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
131	CA 5.4	Roustian A. et al.	2014	Genotoxicity of mixtures of glyphosate and atrazine and their environmental transformation products before and after photoactivation.	Chemosphere (2014), Vol. 108, pp. 93	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
138	CA 5.4	Santovito A. et al.	2018	In vitro evaluation of genomic damage induced by glyphosate on human lymphocytes.	Environmental science and pollution research international (2018), Vol. 25, No. 34, pp. 34693	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
152	CA 5.4	Suarez-Larios K. et al.	2017	Screening of Pesticides with the Potential of Inducing DSB and Successive Recombinational Repair.	Journal of Toxicology (2017), Article ID 3574840	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
165	CA 5.4	Townsend M. et al.	2017	Evaluation of various glyphosate concentrations on DNA damage in human Raji cells and its impact on cytotoxicity.	Regulatory toxicology and pharmacology (2017), Vol. 85, pp. 79	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
6	CA 5.5	Andreotti G. et al.	2018	Glyphosate Use and Cancer Incidence in the Agricultural Health Study	Journal of the national cancer institute (2018) Vol. 110, No. 5, pp. 509	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
14	CA 5.5	Biserni M. et al.	2019	Quizalofop-p-Ethyl Induces Adipogenesis in 3T3-L1 Adipocytes.	Toxicological sciences (2019), Vol. 1, No. 170, pp. 452	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
30	CA 5.5	Crump K.	2020	The Potential Effects of Recall Bias and Selection Bias on the Epidemiological Evidence for the Carcinogenicity of Glyphosate.	Risk analysis (2020), Vol. 40, pp. 696	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
44	CA 5.5	Duforestel M. et al.	2019	Glyphosate Primes Mammary Cells for Tumorigenesis by Reprogramming the Epigenome in a TET3-Dependent Manner.	Frontiers in genetics (2019), Vol. 10, pp. 885	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
116	CA 5.5	Pahwa M. et al.	2019	Glyphosate use and associations with non-Hodgkin lymphoma major histological sub-types: findings from the North American Pooled Project.	Scandinavian journal of work, environment & health (2019), Vol. 1; No. 45, pp. 600	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
123	CA 5.5	Presutti R. et al.	2016	Pesticide exposures and the risk of multiple myeloma in men: An analysis of the North American Pooled Project.	International Journal of Cancer (2016), Vol. 139, No. 8, pp. 1703	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
149	CA 5.5	Sorahan T.	2015	Multiple myeloma and glyphosate use: a re-analysis of US Agricultural Health Study (AHS) data.	International journal of environmental research and public health (2015), Vol. 12, No. 2, pp. 1548	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
173	CA 5.5	Wang L. et al.	2019	Glyphosate induces benign monoclonal gammopathy and promotes multiple myeloma progression in mice.	Journal of hematology & oncology, (2019), Vol. 12, No. 1, pp. 70	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
175	CA 5.5	Wozniak E. et al.	2019	Glyphosate affects methylation in the promoter regions of selected tumor suppressors as well as expression of major cell cycle and apoptosis drivers in PBMCs (in vitro study).	Toxicology in vitro (2019), Vol. 63, pp. 104736	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
33	CA 5.6	Dai P. et al.	2016	Effect of glyphosate on reproductive organs in male rat.	Acta histochemica (2016), Vol. 118, No. 5, pp. 51	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
46	CA 5.6	Forgacs A. L. et al.	2012	BLTK1 murine Leydig cells: a novel steroidogenic model for evaluating the effects of reproductive and developmental toxicants.	Toxicological sciences (2012), Vol. 127, No. 2, pp. 391	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
56	CA 5.6	Gorga A. et al.	2020	In vitro effects of glyphosate and Roundup on Sertoli cell physiology.	Toxicology in vitro (2020), Vol. 62, pp. 104682	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
69	CA 5.6	Johansson H. et al.	2018	Exposure to a glyphosate-based herbicide formulation, but not glyphosate alone, has only minor effects on adult rat testis.	Reproductive toxicology (2018), Vol. 82, pp. 25	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
93	CA 5.6	Manservigi F. et al.	2019	The Ramazzini Institute 13-week pilot study glyphosate-based herbicides administered at human-equivalent dose to Sprague Dawley rats: effects on development and endocrine system.	Environmental health (2019), Vol. 18, No. 1, pp. 15	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
117	CA 5.6	Panzacchi S. et al.	2018	The Ramazzini Institute 13-week study on glyphosate-based herbicides at human-equivalent dose in Sprague Dawley rats: study design and first in-life endpoints evaluation	Environmental Health (2018), Vol. 17, pp. 52/1	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
119	CA 5.6	Perego M. C. et al.	2017	Evidence for direct effects of glyphosate on ovarian function: glyphosate influences steroidogenesis and proliferation of bovine granulosa but not theca cells in vitro.	Journal of applied toxicology (2017), Vol. 37, No. 6, pp. 692	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
121	CA 5.6	Pham Thu H. et al.	2019	Perinatal Exposure to Glyphosate and a Glyphosate-Based Herbicide Affect Spermatogenesis in Mice.	Toxicological sciences (2019), Vol. 169, No. 1, pp. 260	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
128	CA 5.6	Ren Xin et al.	2019	Effects of chronic glyphosate exposure to pregnant mice on hepatic lipid metabolism in offspring.	Environmental pollution (2019), Vol. 254, No. Pt A, pp. 112906	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
177	CA 5.6	Zhang J. et al.	2019	The toxic effects and possible mechanisms of glyphosate on mouse oocytes.	Chemosphere (2019), Vol. 237, pp. 12435	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
22	CA 5.7	Chorfa A. et al.	2013	Specific pesticide-dependent increases in α -synuclein levels in human neuroblastoma (SH-SY5Y) and melanoma (SK-MEL-2) cell lines.	Toxicological sciences (2013), Vol. 133, No. 2, pp. 289	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
95	CA 5.7	Martinez A. et al.	2019	Effects of glyphosate and aminomethylphosphonic acid on an isogenic model of the human blood-brain barrier.	Toxicology letters (2019), Vol. 304, pp. 39	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
96	CA 5.7	Martinez M. A. et al.	2018	Neurotransmitter changes in rat brain regions following glyphosate exposure.	Environmental research (2018), Vol. 161, pp. 212	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
101	CA 5.8	Mesnage R. et al.	2018	Ignoring Adjuvant Toxicity Falsifies the Safety Profile of Commercial Pesticides.	Frontiers in Public Health (2018), Vol. 5, pp. 361	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
169	CA 5.8	Vanlaeys A. et al.	2018	Formulants of glyphosate-based herbicides have more deleterious impact than glyphosate on TM4 Sertoli cells.	Toxicology in vitro (2018), Vol. 52, pp. 14.	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
60	CA 5.8.1	Hao Y. et al.	2019	Roundup-Induced AMPK/mTOR-Mediated Autophagy in Human A549 Cells.	Journal of agricultural and food chemistry (2019), Vol. 67, No. 41, pp. 11364	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
80	CA 5.8.1	Kwiatkowska M. et al.	2020	Evaluation of apoptotic potential of glyphosate metabolites and impurities in human peripheral blood mononuclear cells (in vitro study).	Food and chemical toxicology (2020) Vol. 135, pp. 110888	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
47	CA 5.8.2	Forsythe S. D. et al.	2018	Environmental Toxin Screening Using Human-Derived 3D Bioengineered Liver and Cardiac Organoids.	Frontiers in public health (2018), Vol. 6, pp. 103	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
52	CA 5.8.3	Gigante P. et al.	2018	Glyphosate affects swine ovarian and adipose stromal cell functions.	Animal reproduction science (2018), Vol. 195, pp. 185	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
102	CA 5.8.3	Mesnage R. et al.	2017	Evaluation of estrogen receptor alpha activation by glyphosate-based herbicide constituents.	Food and chemical toxicology (2017) Vol. 108, No. Pt A, pp. 30	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
162	CA 5.8.3	Thongprakisang S. et al.	2013	Glyphosate induces human breast cancer cells growth via estrogen receptors.	Food and chemical toxicology (2013), Vol. 59, pp. 129	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
23	CA 5.9	Connolly A. et al.	2018	Characterising glyphosate exposures among amenity horticulturists using multiple spot urine samples.	International journal of hygiene and environmental health (2018), Vol. 221, No. 7, pp. 1012	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
24	CA 5.9	Connolly A. et al.	2019	Exploring the half-life of glyphosate in human urine samples.	International journal of hygiene and environmental health (2019), Vol. 222, No. 2, pp. 205	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
25	CA 5.9	Connolly A. et al.	2017	Exposure assessment using human biomonitoring for glyphosate and fluroxypyr users in amenity horticulture.	International journal of hygiene and environmental health (2017), Vol. 220, No. 6, pp. 1064	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
26	CA 5.9	Connolly A. et al.	2018	Glyphosate in Irish adults - A pilot study in 2017.	Environmental research (2018), Vol. 165, pp. 235	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
27	CA 5.9	Connolly A. et al.	2019	Evaluating Glyphosate Exposure Routes and Their Contribution to Total Body Burden: A Study Among Amenity Horticulturalists.	Annals of work exposures and health (2019), Vol. 63, No. 2, pp. 133	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
28	CA 5.9	Conrad A. et al.	2017	Glyphosate in German adults - Time trend (2001 to 2015) of human exposure to a widely used herbicide	International journal of hygiene and environmental health (2017), Vol. 220, No. 1, pp. 8	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
77	CA 5.9	Kongtip P. et al.	2017	Glyphosate and Paraquat in Maternal and Fetal Serums in Thai Women.	Journal of agromedicine (2017), Vol. 22, No. 3, pp. 282	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
98	CA 5.9	McGuire M. K. et al.	2016	Glyphosate and aminomethylphosphonic acid are not detectable in human milk.	The American journal of clinical nutrition (2016), Vol. 103, No. 5, pp. 1285	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
146	CA 5.9	Sierra-Diaz E. et al.	2019	Urinary pesticide levels in children and adolescents residing in two agricultural communities in Mexico	International Journal of Environmental Research and Public Health (2019), Vol. 16, No. 4, pp. 562	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
150	CA 5.9	Steinborn A. et al.	2016	Determination of Glyphosate Levels in Breast Milk Samples from Germany by LC-MS/MS and GC-MS/MS.	Journal of agricultural and food chemistry (2016), Vol. 64, No. 6, pp. 1414	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
166	CA 5.9	Trasande L. et al.	2020	Glyphosate exposures and kidney injury biomarkers in infants and young children.	Environmental pollution (2020), Vol. 256, pp. 113334	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
11	CA 6.10.1	Berg C. J. et al.	2018	Glyphosate residue concentrations in honey attributed through geospatial analysis to proximity of large-scale agriculture and transfer off-site by bees.	PLoS one (2018), Vol. 13, No. 7, pp. 0198876	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
21	CA 6.10.1	Chiesa L. M. et al.	2019	Detection of glyphosate and its metabolites in food of animal origin based on ion-chromatography-high resolution mass spectrometry (IC-HRMS).	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment (2019), Vol. 36, No. 4, pp. 592	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
45	CA 6.10.1	El Agrebi N. et al.	2020	Honeybee and consumer's exposure and risk characterisation to glyphosate-based herbicide (GBH) and its degradation product (AMPA): Residues in beebread, wax, and honey.	The Science of the total environment, (2020), Vol. 704, pp. 135312	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
72	CA 6.10.1	Karise R. et al.	2017	Are pesticide residues in honey related to oilseed rape treatments?.	Chemosphere (2017), Vol. 188, pp. 389	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
132	CA 6.10.1	Rubio F. et al.	2014	Survey of Glyphosate Residues in Honey, Corn and Soy Products	Journal of Environmental and Analytical Toxicology (2014), Vol. 5, pp. 249	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
161	CA 6.10.1	Thompson T. S et al.	2019	Determination of glyphosate, AMPA, and glufosinate in honey by online solid-phase extraction-liquid chromatography-tandem mass spectrometry.	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment (2019), Vol. 36, No. 3, pp. 434	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
142	CA 6.4.1	Shehata A. A. et al.	2014	Distribution of Glyphosate in Chicken Organs and its Reduction by Humic Acid Supplementation.	Journal of Poultry Science (2014), Vol. 51, No. 3, pp. 333	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
139	CA 6.4.2	Schnabel K. et al.	2017	Effects of glyphosate residues and different concentrate feed proportions on performance, energy metabolism and health characteristics in lactating dairy cows.	Archives of animal nutrition (2017) Vol. 71, No. 6, pp. 413	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
143	CA 6.4.2	Shelver W. L. et al.	2018	Distribution of Chemical Residues among Fat, Skim, Curd, Whey, and Protein Fractions in Fortified, Pasteurized Milk	ACS Omega (2018), Vol. 3, No. 8, pp. 8697	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
172	CA 6.4.2	von Soosten D. et al.	2016	Excretion pathways and ruminal disappearance of glyphosate and its degradation product aminomethylphosphonic acid in dairy cows.	Journal of dairy science (2016), Vol. 99, No. 7, pp. 5318	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
179	CA 6.9	Zoller O. et al.	2018	Glyphosate residues in Swiss market foods: monitoring and risk evaluation.	Food additives & contaminants. Part B, Surveillance (2018), Vol. 11, No. 2, pp. 83.	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
153	CA 7.1.1.1	Sun M. et al.	2019	Degradation of glyphosate and bioavailability of phosphorus derived from glyphosate in a soil-water system	Water research (2019), Vol. 163, pp. 114840	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
3	CA 7.1.2.1.1	Alexa E. et al.	2010	Studies on the biodegradation capacity of C-14-labelled glyphosate in vine plantation soils.	Journal of Food Agriculture & Environment (2010), Vol. 8, No. 3-4, Part 2, pp. 1193	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
4	CA 7.1.2.1.1	Al-Rajab A. J. et al.	2010	Degradation of ¹⁴ C-glyphosate and aminomethylphosphonic acid (AMPA) in three agricultural soils.	Journal of environmental sciences (China) (2010), Vol. 22, No. 9, pp. 1374	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
113	CA 7.1.2.1.1	Nghia Nguyen Khoi et al.	2013	Soil properties governing biodegradation of the herbicide glyphosate in agricultural soils.	Proceedings of the 24th Asian-Pacific Weed Science Society Conference (2013), pp. 312	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
114	CA 7.1.2.1.1	Norgaard T. et al.	2015	Can Simple Soil Parameters Explain Field-Scale Variations in Glyphosate-, Bromoxyniloctanoate-, Diflufenican-, and Bentazone Mineralization?	Water, air, and soil pollution (2015), Vol. 226, No. 8, pp. 262	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
70	CA 7.1.2.1.1, CA 7.1.2.1.3, CA 7.1.3.1.1	Kanissery R. G. et al.	2015	Effect of soil aeration and phosphate addition on the microbial bioavailability of carbon-14-glyphosate.	Journal of environmental quality (2015), Vol. 44, No. 1, pp. 137	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
51	CA 7.1.2.1.1, CA 7.1.3.1	Ghafoor A. et al.	2011	Measurements and modeling of pesticide persistence in soil at the catchment scale.	The Science of the total environment, (2011), Vol. 409, No. 10, pp. 1900	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
20	CA 7.1.2.1.1, CA 7.1.3.1.1	Cassigneul A. et al.	2016	Fate of glyphosate and degradates in cover crop residues and underlying soil: A laboratory study.	The Science of the total environment (2016), Vol. 545-546, pp. 582	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
124	CA 7.1.2.1.1, CA 7.1.3.1.1	Rampoldi E. A. et al.	2014	Carbon-14-glyphosate behavior in relationship to pedoclimatic conditions and crop sequence.	Journal of environmental quality, (2014), Vol. 43, No. 2, pp. 558	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
178	CA 7.1.2.1.1, CA 7.1.3.1.1	Zhelezova A. et al.	2017	Effect of Biochar Amendment and Ageing on Adsorption and Degradation of Two Herbicides.	Water, air, and soil pollution (2017) Vol. 228, No. 6, pp. 216	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
12	CA 7.1.2.1.1, CA 7.1.3.1.1, CA 7.1.4.2	Bergstrom L. et al.	2011	Laboratory and Lysimeter Studies of Glyphosate and Aminomethylphosphonic Acid in a Sand and a Clay Soil	Journal of environmental quality (2011), Vol. 40, No. 1, pp. 98	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
5	CA 7.1.2.1.1, CA 7.1.4.1.1	Al-Rajab A. J. et al.	2014	Behavior of the non-selective herbicide glyphosate in agricultural soil.	American Journal of Environmental Sciences (2014), Vol. 10, No. 2, pp. 94	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
118	CA 7.1.2.2.1	Passeport E. et al.	2014	Dynamics and mitigation of six pesticides in a "Wet" forest buffer zone.	Environmental science and pollution research international (2014), Vol. 21, No. 7, pp. 4883	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
164	CA 7.1.2.2.1	Todorovic G. et al.	2014	Influence of soil tillage and erosion on the dispersion of glyphosate and aminomethylphosphonic acid in agricultural soils	International agrophysics (2014), Vol. 28, No. 1, pp. 93	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
2	CA 7.1.3.1.1	Albers C. et al.	2019	Soil Domain and Liquid Manure Affect Pesticide Sorption in Macroporous Clay Till.	Journal of environmental quality (2019), Vol. 48, No. 1, pp. 147	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
42	CA 7.1.3.1.1	Dollinger J. et al.	2018	Contrasting soil property patterns between ditch bed and neighbouring field profiles evidence the need of specific approaches when assessing water and pesticide fate in farmed landscapes	Geoderma (2018), Vol. 309, pp. 50	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
43	CA 7.1.3.1.1	Dollinger J. et al.	2015	Glyphosate sorption to soils and sediments predicted by pedotransfer functions	Environmental chemistry letters (2015), Vol. 13, No. 3, pp. 293	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
55	CA 7.1.3.1.1	Gomez Ortiz A. M. et al.	2017	Sorption and desorption of glyphosate in Mollisols and Ultisols soils of Argentina.	Environmental toxicology and chemistry (2017), Vol. 36, No. 10, pp. 2587	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
67	CA 7.1.3.1.1	Jodeh S. et al.	2014	Fate and mobility of glyphosate leachate in palestinian soil using soil column	Journal of Materials and Environmental Science (2014) Vol. 5, No. 6, pp. 2008	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
107	CA 7.1.3.1.1	Munira S. et al.	2016	Phosphate fertilizer impacts on glyphosate sorption by soil.	Chemosphere (2016), Vol. 153, pp. 471	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
108	CA 7.1.3.1.1	Munira S. et al.	2017	Sorption and desorption of glyphosate, MCPA and tetracycline and their mixtures in soil as influenced by phosphate.	Journal of environmental science and health. Part B, Pesticides, food contaminants, and agricultural wastes (2017), Vol. 52, No. 12, pp. 887	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
109	CA 7.1.3.1.1	Munira S. et al.	2017	Phosphate and glyphosate sorption in soils following long-term phosphate applications	Geoderma (2017), Vol. 313, pp. 146	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
145	CA 7.1.3.1.1, CA 7.1.3.1.2	Sidoli P. et al.	2016	Glyphosate and AMPA adsorption in soils: laboratory experiments and pedotransfer rules.	Environmental science and pollution research international (2016), Vol. 23, No. 6, pp. 5733	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
148	CA 7.1.3.1.1, CA 7.1.3.1.2	Skeff W. et al.	2018	Adsorption behaviors of glyphosate, glufosinate, aminomethylphosphonic acid, and 2-aminoethylphosphonic acid on three typical Baltic Sea sediments.	Marine Chemistry (2018) ,Vol. 198, pp. 1	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
159	CA 7.1.3.1.1, CA 7.1.3.1.2	Tevez H. R.	2015	pH dependence of Glyphosate adsorption on soil horizons.	Boletín de la sociedad geológica Mexicana (2015), Vol. 67, No. 3, pp. 509	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
53	CA 7.1.4.1.1	Gjettermann B. et al.	2011	Kinetics of Glyphosate Desorption from Mobilized Soil Particles.	Soil Science Society of America journal (2011), Vol. 75, No. 2, pp. 434	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
54	CA 7.1.4.1.1	Gjettermann B. et al.	2011	Evaluation of Sampling Strategies for Pesticides in a Macroporous Sandy Loam Soil.	Soil & sediment contamination (2011), Vol. 20, No. 5	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
111	CA 7.1.4.2	Napoli M. et al.	2015	Leaching of Glyphosate and Aminomethylphosphonic Acid through Silty Clay Soil Columns under Outdoor Conditions.	Journal of environmental quality, (2015), Vol. 44, No. 5, pp. 1667	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
8	CA 7.1.4.3	Aronsson H. et al.	2011	Leaching of N, P and glyphosate from two soils after herbicide treatment and incorporation of a ryegrass catch crop.	Soil use and management (2011), Vol. 27, No. 1, pp. 54	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
19	CA 7.1.4.3	Candela L. et al.	2010	Glyphosate transport through weathered granite soils under irrigated and non-irrigated conditions--Barcelona, Spain.	The Science of the total environment, (2010), Vol. 408, No. 12, pp. 2509	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
75	CA 7.1.4.3	Kjaer J. et al.	2011	Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils.	Chemosphere (2011), Vol. 84, No. 4, pp. 471	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
167	CA 7.1.4.3	Ulen B. M. et al.	2014	Spatial variation in herbicide leaching from a marine clay soil via subsurface drains.	Pest management science (2014), Vol. 70, No. 3, pp. 405	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
168	CA 7.1.4.3	Ulen B. M. et al.	2012	Particulate-facilitated leaching of glyphosate and phosphorus from a marine clay soil via tile drains.	Acta agriculturae Scandinavica (2012), Vol. 62, pp. 241	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
174	CA 7.2.2.3	Wang S. et al.	2016	(Bio)degradation of glyphosate in water-sediment microcosms - A stable isotope co-labeling approach.	Water research (2016), Vol. 99, pp. 91	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
10	CA 7.3.1	Bento C. P. M. et al.	2017	Glyphosate and AMPA distribution in wind-eroded sediment derived from loess soil.	Environmental pollution (2017), Vol. 220, No. Pt B, pp. 1079-1089	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
9	CA 7.5	Assalin M. R. et al.	2010	Studies on degradation of glyphosate by several oxidative chemical processes: ozonation, photolysis and heterogeneous photocatalysis.	Journal of environmental science and health. Part B, Pesticides, food contaminants, and agricultural wastes, (2010), Vol. 45, No. 1, pp. 89	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
13	CA 7.5	Birch H et al.	2011	Micropollutants in stormwater runoff and combined sewer overflow in the Copenhagen area, Denmark.	Water science and technology : a journal of the International Association on Water Pollution Research (2011), Vol. 64, No. 2, pp. 485	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
15	CA 7.5	Botta F. et al.	2012	Phyt'Eaux Cites: application and validation of a programme to reduce surface water contamination with urban pesticides.	Chemosphere (2012), Vol. 86, No. 2, pp. 166	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
16	CA 7.5	Boucherie C. et al.	2010	"Ozone" and "GAC filtration" synergy for removal of emerging micropollutants in a drinking water treatment plant?	Water Science and Technology: Water Supply (2010), Vol. 10, No. 5, pp. 860	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
17	CA 7.5	Bruchet A. et al.	2011	Natural attenuation of priority and emerging contaminants during river bank filtration and artificial recharge	European Journal of Water Quality (2011), Vol. 42, No. 2, pp. 123	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
18	CA 7.5	Busetto M. et al.	2010	Surveys of herbicide glyphosate and degradation product aminomethyl phosphonic acid in waterways of Monza-Brianza province	Bollettino - Unione Italiana degli Esperti Ambientali (2010), Vol. 61, No. 4, pp. 46	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
29	CA 7.5	Coupe R. et al.	2012	Fate and transport of glyphosate and aminomethylphosphonic acid in surface waters of agricultural basins.	Pest management science (2012), Vol. 68, No. 1, pp. 16	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
34	CA 7.5	Dairon R. et al.	2017	Long-term impact of reduced tillage on water and pesticide flow in a drained context	Environmental Science and Pollution Research (2017), Vol. 24, pp. 6866	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
35	CA 7.5	Daouk S. et al.	2013	The herbicide glyphosate and its metabolite AMPA in the Lavaux vineyard area, western Switzerland: proof of widespread export to surface waters. Part II: the role of infiltration and surface runoff.	Journal of environmental science and health. Part B, Pesticides, food contaminants, and agricultural wastes (2013), Vol. 48, No. 9, pp. 725	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
36	CA 7.5	Daouk S. et al.	2013	The herbicide glyphosate and its metabolite AMPA in the Lavaux vineyard area, Western Switzerland: proof of widespread export to surface waters. Part I: method validation in different water matrices.	Journal of environmental science and health. Part B, Pesticides, food contaminants, and agricultural wastes (2013), Vol. 48, No. 9, pp. 717	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
39	CA 7.5	Desmet N. et al.	2016	A hybrid monitoring and modelling approach to assess the contribution of sources of glyphosate and AMPA in large river catchments.	The Science of the total environment (2016), Vol. 573, pp. 1580	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
40	CA 7.5	Di Guardo A. et al.	2018	A new methodology to identify surface water bodies at risk by using pesticide monitoring data: The glyphosate case study in Lombardy Region (Italy)	Science of the total environment (2018), Vol. 1; No. 610-611, pp. 421	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
41	CA 7.5	Di Guardo A. et al.	2016	A moni-modeling approach to manage groundwater risk to pesticide leaching at regional scale	Science of the Total Environment, (2016) Vol. 545-546, pp. 200-209. CODEN: STENL. ISSN: 0048-9697.	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
50	CA 7.5	Gasperi J. et al.	2014	Micropollutants in urban stormwater: occurrence, concentrations, and atmospheric contributions for a wide range of contaminants in three French catchments	Environmental Science and Pollution Research (2014), Vol. 21, No. 8, pp. 5267	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
57	CA 7.5	Gregoire C. et al.	2010	Use and fate of 17 pesticides applied on a vineyard catchment.	International Journal of Environmental Analytical Chemistry (2010), Vol. 90, No. 3/6, pp. 406	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
58	CA 7.5	Hamann E. et al.	2016	The fate of organic micropollutants during long-term/long-distance river bank filtration	Science of the Total Environment, (2016) Vol. 545-546, pp. 629	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
59	CA 7.5	Hanke I. et al.	2010	Relevance of urban glyphosate use for surface water quality.	Chemosphere (2010), Vol. 81, No. 3, pp. 422	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
61	CA 7.5	Hedegaard M. J. et al.	2014	Microbial pesticide removal in rapid sand filters for drinking water treatment-potential and kinetics.	Water research (2014), Vol. 48, pp. 71	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
62	CA 7.5	Houtman C. J. et al.	2013	A multicomponent snapshot of pharmaceuticals and pesticides in the river Meuse basin	Environmental Toxicology and Chemistry (2013), Vol. 32, No. 11, pp. 2449	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
63	CA 7.5	Huntscha S. et al.	2018	Seasonal Dynamics of Glyphosate and AMPA in Lake Greifensee: Rapid Microbial Degradation in the Epilimnion During Summer.	Environmental science & technology, (2018), Vol. 52, No. 8, pp. 4641	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
66	CA 7.5	Imfeld G.	2013	Transport and attenuation of dissolved glyphosate and AMPA in a stormwater wetland.	Chemosphere (2013), Vol. 90, No. 4, pp. 1333	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
68	CA 7.5	Joensson J. et al.	2013	Removal and degradation of glyphosate in water treatment: a review.	Journal of Water Supply Research and Technology (2013), Vol. 62, No. 7, pp. 395	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
71	CA 7.5	Karanastos E. et al.	2018	Monitoring of glyphosate and AMPA in soil samples from two olive cultivation areas in Greece: aspects related to spray operators activities	Environmental Monitoring and Assessment (2018), Vol. 190, No. 6, pp. 1	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
74	CA 7.5	Kegel Schoonenberg F. et al.	2010	Reverse osmosis followed by activated carbon filtration for efficient removal of organic micropollutants from river bank filtrate.	Water science and technology (2010) Vol. 61, No. 10, pp. 2603	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
81	CA 7.5	Lamprea K. et al.	2011	Pollutant concentrations and fluxes in both stormwater and wastewater at the outlet of two urban watersheds in Nantes (France)	Urban Water Journal (2011), Vol. 8, no. 4, pp. 219	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
82	CA 7.5	Larso M. et al.	2016	Surface Runoff of Pesticides from a Clay Loam Field in Sweden.	Journal of environmental quality, (2016), Vol. 45, No. 4, pp. 1367	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
83	CA 7.5	Lefrancq M. et al.	2017	High frequency monitoring of pesticides in runoff water to improve understanding of their transport and environmental impacts.	The Science of the total environment, (2017), Vol. 587-588, pp. 75	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
84	CA 7.5	Lerch R. N. et al.	2017	Vegetative buffer strips for reducing herbicide transport in runoff: effects of buffer width, vegetation, and season.	Journal of the American Water Resources Association (2017), Vol. 53, No. 3, pp. 667	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
86	CA 7.5	Litz N. T. et al.	2011	Comparative studies on the retardation and reduction of glyphosate during subsurface passage.	Water research, (2011), Vol. 45, No. 10, pp. 3047	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
87	CA 7.5	Maillard E. et al.	2014	Pesticide mass budget in a stormwater wetland.	Environmental science & technology (2014), Vol. 48, No. 15, pp. 8603	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
88	CA 7.5	Maillard E. et al.	2011	Removal of pesticide mixtures in a stormwater wetland collecting runoff from a vineyard catchment.	The Science of the total environment, (2011), Vol. 409, No. 11, pp. 2317	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
89	CA 7.5	Malaguerra F. et al.	2012	Pesticides in water supply wells in Zealand, Denmark: A statistical analysis.	Science of the Total Environment, (2012), Vol. 414, pp. 433	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
90	CA 7.5	Malaguerra F. et al.	2013	Assessment of the contamination of drinking water supply wells by pesticides from surface water resources using a finite element reactive transport model and global sensitivity analysis techniques	Journal of hydrology (2013), Vol. 476, pp. 321	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
92	CA 7.5	Manassero A. et al.	2010	Glyphosate degradation in water employing the H2O2/UVC process.	Water research (2010), Vol. 44, No. 13, pp. 3875	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
94	CA 7.5	Martin J. et al.	2013	Sugarcane, herbicides and water pollution in Reunion Island: achievements and perspectives after ten years of monitoring.	Journées Internationales sur la Lutte contre les Mauvaises Herbes, (2013), pp. 641	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
97	CA 7.5	Masiol M. et al.	2018	Herbicides in river water across the northeastern Italy: occurrence and spatial patterns of glyphosate, aminomethylphosphonic acid, and glufosinate ammonium.	Environmental science and pollution research international (2018), Vol. 25, No. 24, pp. 24368	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
99	CA 7.5	McManus S. et al.	2014	Pesticide occurrence in groundwater and the physical characteristics in association with these detections in Ireland	Environmental Monitoring and Assessment (2014), Vol. 186, No. 11, pp. 7819	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
103	CA 7.5	Meyer B. et al.	2011	Concentrations of dissolved herbicides and pharmaceuticals in a small river in Luxembourg	Environmental Monitoring and Assessment (2011), Vol. 180, No. 1-4, pp. 127	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
105	CA 7.5	Moertl M. et al.	2013	Determination of glyphosate residues in Hungarian water samples by immunoassay	Microchemical Journal (2013), Vol. 107, pp. 143	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
106	CA 7.5	Mottes C. et al.	2017	Relationships between past and present pesticide applications and pollution at a watershed outlet: The case of a horticultural catchment in Martinique, French West Indies.	Chemosphere (2017), Vol. 184, pp. 762	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
112	CA 7.5	Napoli M. et al.	2016	Transport of Glyphosate and Aminomethylphosphonic Acid under Two Soil Management Practices in an Italian Vineyard.	Journal of environmental quality, (2016), Vol. 45, No. 5, pp. 1713	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
115	CA 7.5	Norgaard T. et al.	2014	Leaching of Glyphosate and Aminomethylphosphonic Acid from an Agricultural Field over a Twelve-Year Period	Viadose Zone Journal (2014), Vol. 13, No. 10, pp. 18	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
120	CA 7.5	Petersen J. et al.	2012	Sampling of herbicides in streams during flood events.	Journal of environmental monitoring (2012), Vol. 14, No. 12, pp. 3284	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
122	CA 7.5	Poiger T. et al.	2017	Occurrence of the herbicide glyphosate and its metabolite AMPA in surface waters in Switzerland determined with on-line solid phase extraction LC-MS/MS.	Environmental science and pollution research international (2017), Vol. 24, No. 2, pp. 1588	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
125	CA 7.5	Ramwell C. T. et al.	2014	Contribution of household herbicide usage to glyphosate and its degradate aminomethylphosphonic acid in surface water drains.	Pest management science (2014) Vol. 70, No. 12, pp. 1823	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
127	CA 7.5	Ravier S. et al.	2019	Monitoring of Glyphosate, Glufosinate-ammonium, and (Aminomethyl) phosphonic acid in ambient air of Provence-Alpes-Cote-d'Azur Region, France.	Atmospheric Environment (2019), Vol. 204, pp. 102	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
129	CA 7.5	Reoyo-Prats B. et al.	2017	Multicontamination phenomena occur more often than expected in Mediterranean coastal watercourses: Study case of the Tet River (France)	Science of the Total Environment (2017), Vol. 579, pp. 10	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
130	CA 7.5	Rosenbom A. et al.	2015	Pesticide leaching through sandy and loamy fields - Long-term lessons learnt from the Danish Pesticide Leaching Assessment Programme	Environmental Pollution (2015), Vol. 201, pp. 75	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
133	CA 7.5	Ruel S. M. et al.	2011	On-site evaluation of the removal of 100 micro-pollutants through advanced wastewater treatment processes for reuse applications.	Water Science and Technology (2011), Vol. 63, No. 11, pp. 2486	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
134	CA 7.5	Ruel S. M. et al.	2012	Occurrence and fate of relevant substances in wastewater treatment plants regarding Water Framework Directive and future legislations	Water Science and Technology (2012), Vol. 65, No. 7, pp. 1179	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
135	CA 7.5	Sabatier P. et al.	2014	Long-term relationships among pesticide applications, mobility, and soil erosion in a vineyard watershed.	Proceedings of the National Academy of Sciences of the United States of America (2014), Vol. 111, No. 44, pp. 15647	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
136	CA 7.5	Sanchis J. et al.	2012	Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by on-line solid-phase extraction followed by liquid chromatography coupled to tandem mass spectrometry.	Analytical and bioanalytical chemistry (2012), Vol. 402, No. 7, pp. 2335	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
137	CA 7.5	Sanchis J. et al.	2012	Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by on-line solid-phase extraction followed by liquid chromatography coupled to tandem mass spectrometry [Erratum to document cited in CA156:223888]	Analytical and Bioanalytical Chemistry (2012), Vol. 404, No. 2, pp. 617	5.4.1 case a) relevant and provides data for the risk assessment: Erratum to summary that is provided in MCA 7 (Sanchis et al.)
140	CA 7.5	Schreiner V. C. et al.	2016	Pesticide mixtures in streams of several European countries and the USA	Science of the Total Environment (2016), Vol. 573, pp. 680	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
144	CA 7.5	Shen Y. et al.	2011	Ozonation of herbicide glyphosate	Huanjing Kexue Xuebao (2011), Vol. 31, pp. 1647	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
147	CA 7.5	Silva V. et al.	2018	Distribution of glyphosate and aminomethylphosphonic acid (AMPA) in agricultural topsoils of the European Union	Science of the total environment (2018), Vol. 15, pp. 1352	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
151	CA 7.5	Stenrod M.	2015	Long-term trends of pesticides in Norwegian agricultural streams and potential future challenges in northern climate	Acta Agriculturae Scandinavica, Section B - Soil & Plant Science (2015), Vol. 65, pp. 199	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
155	CA 7.5	Szekacs A.	2015	Monitoring Pesticide Residues in Surface and Ground Water in Hungary: Surveys in 1990-2015	Journal of chemistry (2015), Article ID 717948	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
156	CA 7.5	Szekacs A.	2014	Monitoring and biological evaluation of surface water and soil micropollutants in Hungary	Carpathian Journal of Earth and Environmental Sciences (2014), Vol. 9, No. 3, pp. 47	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
158	CA 7.5	Tang T. et al.	2015	Quantification and characterization of glyphosate use and loss in a residential area.	The Science of the total environment (2015), Vol. 517, pp. 207	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
170	CA 7.5	Vialle C. et al.	2013	Pesticides in roof runoff: study of a rural site and a suburban site.	Journal of environmental management (2013), Vol. 120, pp. 48	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
176	CA 7.5	Zgheib S. et al.	2012	Priority pollutants in urban stormwater: Part 1 - Case of separate storm sewers	Water Research (2012), Vol. 46, No. 20, pp. 6683	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
7	CA 8.2.1	Antunes A. M. et al.	2017	Gender-specific histopathological response in guppies <i>Poecilia reticulata</i> exposed to glyphosate or its metabolite aminomethylphosphonic acid.	Journal of applied toxicology (2017), Vol. 37, No. 9, pp. 1098	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
141	CA 8.2.1	Schweizer M. et al.	2019	How glyphosate and its associated acidity affect early development in zebrafish (<i>Danio rerio</i>).	PeerJ (2019), Vol. 7, pp. e7094	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
154	CA 8.2.1	Syedkolaei-Gholami S. J. et al.	2013	Toxicity evaluation of Malathion, Carbaryl and Glyphosate in common carp fingerlings (<i>Cyprinus carpio</i> , Linnaeus, 1758).	Journal of Veterinary Research (2013), Vol. 68, No. 3, pp. 257	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
48	CA 8.2.1, CP 10.2.1	Gabriel U. U. et al.	2010	Toxicity of roundup (a glyphosate product) to fingerlings of <i>Clarias gariepinus</i> .	Animal Research International (2010), Vol. 7, No. 2, pp. 1184	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
85	CA 8.2.2, CA 8.2.5	Levine S. L. et al.	2015	Aminomethylphosphonic acid has low chronic toxicity to <i>Daphnia magna</i> and <i>Pimephales promelas</i> .	Environmental toxicology and chemistry (2015), Vol. 34, No. 6, pp. 1382	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
38	CA 8.2.2.1	de Brito Rodrigues L. et al.	2019	Impact of the glyphosate-based commercial herbicide, its components and its metabolite AMPA on non-target aquatic organisms.	Mutation research (2019), Vol. 842, pp. 94	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
163	CA 8.2.7.	Tian Y. et al.	2015	Growth inhibition of two herbicides on <i>Spirodela polyrrhiza</i>	Nongyao Kexue Yu Guanli (2015), Vol. 36, pp. 61	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
32	CA 8.2.8	Daam M. A. et al.	2019	Lethal toxicity of the herbicides acetochlor, ametryn, glyphosate and metribuzin to tropical frog larvae.	Ecotoxicology (2019), Vol. 28, pp. 707	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
160	CA 8.3.1.3, CP 10.3.1.5	Thompson H. M. et al.	2014	Evaluating exposure and potential effects on honeybee brood (<i>Apis mellifera</i>) development using glyphosate as an example.	Integrated environmental assessment and management (2014), Vol. 10, No. 3, pp. 463	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
171	CA 8.4.1, CA 8.4.2.1, CA 8.5	von Merer G. et al.	2016	Glyphosate and aminomethylphosphonic acid chronic risk assessment for soil biota	Environmental toxicology and chemistry (2016), Vol. 35, pp. 2742	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
126	CP 9.2.4	Rasmussen S. B. et al.	2015	Effects of single rainfall events on leaching of glyphosate and bentazone on two different soil types, using the DAISY model	Vadose Zone Journal (2015), Vol. 14, No. 11, pp. 15	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCP 9

Table 33: Relevant (category A) & reliable or reliable with restrictions articles after detailed assessment: sorted by author(s)

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
1	Adler-Flindt S. et al.	CA 5.4	2019	Comparative cytotoxicity of plant protection products and their active ingredients.	Toxicology In Vitro, (2019) Vol. 54, pp. 354	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
2	Albers C. et al.	CA 7.1.3.1.1	2019	Soil Domain and Liquid Manure Affect Pesticide Sorption in Macroporous Clay Till.	Journal of environmental quality, (2019) Vol. 48, No. 1, pp. 147	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
3	Alexa E. et al.	CA 7.1.2.1.1	2010	Studies on the biodegradation capacity of C-14-labelled glyphosate in vine plantation soils.	Journal of Food Agriculture & Environment (2010), Vol. 8, No. 3-4, Part 2, pp. 1193	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
4	Al-Rajab A. J. et al.	CA 7.1.2.1.1	2010	Degradation of 14C-glyphosate and aminomethylphosphonic acid (AMPA) in three agricultural soils.	Journal of environmental sciences (China), (2010) Vol. 22, No. 9, pp. 1374	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
5	Al-Rajab A. J. et al.	CA 7.1.2.1.1, CA 7.1.4.1.1	2014	Behavior of the non-selective herbicide glyphosate in agricultural soil.	American Journal of Environmental Sciences (2014), Vol. 10, No. 2, pp. 94	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
6	Andreotti G. et al.	CA 5.5	2018	Glyphosate Use and Cancer Incidence in the Agricultural Health Study	Journal of the national cancer institute (2018) Vol. 110, No. 5, pp. 509	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
7	Antunes A. M. et al.	CA 8.2.1	2017	Gender-specific histopathological response in guppies <i>Poecilia reticulata</i> exposed to glyphosate or its metabolite aminomethylphosphonic acid.	Journal of applied toxicology (2017), Vol. 37, No. 9, pp. 1098	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
8	Aronsson H. et al.	CA 7.1.4.3	2011	Leaching of N, P and glyphosate from two soils after herbicide treatment and incorporation of a ryegrass catch crop.	Soil use and management (2011), Vol. 27, No. 1, pp. 54	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
9	Assalin M. R. et al.	CA 7.5	2010	Studies on degradation of glyphosate by several oxidative chemical processes: ozonation, photolysis and heterogeneous photocatalysis.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2010), Vol. 45, No. 1, pp. 89	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
10	Bento C. P. M. et al.	CA 7.3.1	2017	Glyphosate and AMPA distribution in wind-eroded sediment derived from loess soil.	Environmental pollution (2017), Vol. 220, No. Pt B, pp. 1079-1089	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
11	Berg C. J. et al.	CA 6.10.1	2018	Glyphosate residue concentrations in honey attributed through geospatial analysis to proximity of large-scale agriculture and transfer off-site by bees.	PloS one (2018), Vol. 13, No. 7, pp. 0198876	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
12	Bergstrom L. et al.	CA 7.1.2.1.1, CA 7.1.3.1.1, CA 7.1.4.2	2011	Laboratory and Lysimeter Studies of Glyphosate and Aminomethylphosphonic Acid in a Sand and a Clay Soil	Journal of environmental quality (2011), Vol. 40, No. 1, pp. 98	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
13	Birch H et al.	CA 7.5	2011	Micropollutants in stormwater runoff and combined sewer overflow in the Copenhagen area, Denmark.	Water science and technology : a journal of the International Association on Water Pollution Research (2011), Vol. 64, No. 2, pp. 485	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
14	Biserni M. et al.	CA 5.5	2019	Quizalofop-p-Ethyl Induces Adipogenesis in 3T3-L1 Adipocytes.	Toxicological sciences (2019), Vol. 1, No. 170, pp. 452	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
15	Botta F. et al.	CA 7.5	2012	Phyt'Eaux Cites: application and validation of a programme to reduce surface water contamination with urban pesticides.	Chemosphere (2012), Vol. 86, No. 2, pp. 166	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
16	Boucherie C. et al.	CA 7.5	2010	"Ozone" and "GAC filtration" synergy for removal of emerging micropollutants in a drinking water treatment plant?	Water Science and Technology: Water Supply (2010), Vol. 10, No. 5, pp. 860	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
17	Bruchet A. et al.	CA 7.5	2011	Natural attenuation of priority and emerging contaminants during river bank filtration and artificial recharge	European Journal of Water Quality (2011), Vol. 42, No. 2, pp. 123	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
18	Busetto M. et al.	CA 7.5	2010	Surveys of herbicide glyphosate and degradation product aminomethyl phosphonic acid in waterways of Monza-Brianza province	Bollettino - Unione Italiana degli Esperti Ambientali (2010), Vol. 61, No. 4, pp. 46	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
19	Candela L. et al.	CA 7.1.4.3	2010	Glyphosate transport through weathered granite soils under irrigated and non-irrigated conditions--Barcelona, Spain.	The Science of the total environment, (2010), Vol. 408, No. 12, pp. 2509	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
20	Cassaigneul A. et al.	CA 7.1.2.1.1, CA 7.1.3.1.1	2016	Fate of glyphosate and degradates in cover crop residues and underlying soil: A laboratory study.	The Science of the total environment (2016), Vol. 545-546, pp. 582	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
21	Chiesa L. M. et al.	CA 6.10.1	2019	Detection of glyphosate and its metabolites in food of animal origin based on ion-chromatography-high resolution mass spectrometry (IC-HRMS).	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment (2019) Vol. 36, No. 4, pp. 592	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
22	Chorfa A. et al.	CA 5.7	2013	Specific pesticide-dependent increases in α -synuclein levels in human neuroblastoma (SH-SY5Y) and melanoma (SK-MEL-2) cell lines.	Toxicological sciences (2013), Vol. 133, No. 2, pp. 289	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
23	Connolly A. et al.	CA 5.9	2018	Characterising glyphosate exposures among amenity horticulturists using multiple spot urine samples.	International journal of hygiene and environmental health (2018), Vol. 221, No. 7, pp. 1012	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
24	Connolly A. et al.	CA 5.9	2019	Exploring the half-life of glyphosate in human urine samples.	International journal of hygiene and environmental health (2019), Vol. 222, No. 2, pp. 205	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
25	Connolly A. et al.	CA 5.9	2017	Exposure assessment using human biomonitoring for glyphosate and fluroxypyr users in amenity horticulture.	International journal of hygiene and environmental health (2017), Vol. 220, No. 6, pp. 1064	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
26	Connolly A. et al.	CA 5.9	2018	Glyphosate in Irish adults - A pilot study in 2017.	Environmental research (2018), Vol. 165, pp. 235	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
27	Connolly A. et al.	CA 5.9	2019	Evaluating Glyphosate Exposure Routes and Their Contribution to Total Body Burden: A Study Among Amenity Horticulturalists.	Annals of work exposures and health (2019), Vol. 63, No. 2, pp. 133	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
28	Conrad A. et al.	CA 5.9	2017	Glyphosate in German adults - Time trend (2001 to 2015) of human exposure to a widely used herbicide	International journal of hygiene and environmental health (2017), Vol. 220, No. 1, pp. 8	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
29	Coupe R. et al.	CA 7.5	2012	Fate and transport of glyphosate and aminomethylphosphonic acid in surface waters of agricultural basins.	Pest management science (2012), Vol. 68, No. 1, pp. 16	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
30	Crump K.	CA 5.5	2020	The Potential Effects of Recall Bias and Selection Bias on the Epidemiological Evidence for the Carcinogenicity of Glyphosate.	Risk analysis (2020), Vol. 40, pp. 696	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
31	da Silva Natara D. G. et al.	CA 5.4	2019	Interference of goethite in the effects of glyphosate and Roundup® on ZFL cell line.	Toxicology in vitro (2020), Vol. 65, pp. 104755	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
32	Daam M. A. et al.	CA 8.2.8	2019	Lethal toxicity of the herbicides acetochlor, ametryn, glyphosate and metribuzin to tropical frog larvae.	Ecotoxicology (2019), Vol. 28, pp. 707	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
33	Dai P. et al.	CA 5.6	2016	Effect of glyphosate on reproductive organs in male rat.	Acta histochemica (2016) Vol. 118, No. 5, pp. 51	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
34	Dairon R. et al.	CA 7.5	2017	Long-term impact of reduced tillage on water and pesticide flow in a drained context	Environmental Science and Pollution Research (2017), Vol. 24, pp. 6866	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
35	Daouk S. et al.	CA 7.5	2013	The herbicide glyphosate and its metabolite AMPA in the Lavaux vineyard area, western Switzerland: proof of widespread export to surface waters. Part II: the role of infiltration and surface runoff.	Journal of environmental science and health. Part B. Pesticides, food contaminants, and agricultural wastes (2013), Vol. 48, No. 9, pp. 725	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
36	Daouk S. et al.	CA 7.5	2013	The herbicide glyphosate and its metabolite AMPA in the Lavaux vineyard area, Western Switzerland: proof of widespread export to surface waters. Part I: method validation in different water matrices.	Journal of environmental science and health. Part B. Pesticides, food contaminants, and agricultural wastes (2013), Vol. 48, No. 9, pp. 717	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
37	de Almeida, L. K. S. et al.	CA 5.4	2018	Moderate levels of glyphosate and its formulations vary in their cytotoxicity and genotoxicity in a whole blood model and in human cell lines with different estrogen receptor status.	3 Biotech (2018), Vol. 8, No. 10, pp. 438	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
38	de Brito Rodrigues L. et al.	CA 8.2.2.1	2019	Impact of the glyphosate-based commercial herbicide, its components and its metabolite AMPA on non-target aquatic organisms.	Mutation research (2019), Vol. 842, pp. 94	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
39	Desmet N. et al.	CA 7.5	2016	A hybrid monitoring and modelling approach to assess the contribution of sources of glyphosate and AMPA in large river catchments.	The Science of the total environment (2016), Vol. 573, pp. 1580	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
40	Di Guardo A. et al.	CA 7.5	2018	A new methodology to identify surface water bodies at risk by using pesticide monitoring data: The glyphosate case study in Lombardy Region (Italy)	Science of the total environment (2018), Vol. 1; No. 610-611, pp. 421	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
41	Di Guardo A. et al.	CA 7.5	2016	A mini-modeling approach to manage groundwater risk to pesticide leaching at regional scale	Science of the Total Environment, (2016) Vol. 545-546, pp. 200-209. CODEN: STENL. ISSN: 0048-9697.	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
42	Dollinger J. et al.	CA 7.1.3.1.1	2018	Contrasting soil property patterns between ditch bed and neighbouring field profiles evidence the need of specific approaches when assessing water and pesticide fate in farmed landscapes	Geoderma (2018), Vol. 309, pp. 50	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
43	Dollinger J. et al.	CA 7.1.3.1.1	2015	Glyphosate sorption to soils and sediments predicted by pedotransfer functions	Environmental chemistry letters (2015), Vol. 13, No. 3, pp. 293	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
44	Duforestel M. et al.	CA 5.5	2019	Glyphosate Primes Mammary Cells for Tumorigenesis by Reprogramming the Epigenome in a TET3-Dependent Manner.	Frontiers in genetics (2019), Vol. 10, pp. 885	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
45	El Agrebi N. et al.	CA 6.10.1	2020	Honeybee and consumer's exposure and risk characterisation to glyphosate-based herbicide (GBH) and its degradation product (AMPA): Residues in beebread, wax, and honey.	The Science of the total environment, (2020), Vol. 704, pp. 135312	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
46	Forgacs A. L. et al.	CA 5.6	2012	BLTK1 murine Leydig cells: a novel steroidogenic model for evaluating the effects of reproductive and developmental toxicants.	Toxicological sciences (2012), Vol. 127, No. 2, pp. 391	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
47	Forsythe S. D. et al.	CA 5.8.2	2018	Environmental Toxin Screening Using Human-Derived 3D Bioengineered Liver and Cardiac Organoids.	Frontiers in public health (2018), Vol. 6, pp. 103	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
48	Gabriel U. U. et al.	CA 8.2.1, CP 10.2.1	2010	Toxicity of roundup (a glyphosate product) to fingerlings of <i>Clarias gariepinus</i> .	Animal Research International (2010), Vol. 7, No. 2, pp. 1184	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
49	Gao H. et al.	CA 5.3	2019	Activation of the N-methyl-D-aspartate receptor is involved in glyphosate-induced renal proximal tubule cell apoptosis.	Journal of applied toxicology (2019), Vol. 39, pp. 1096	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
50	Gasperi J. et al.	CA 7.5	2014	Micropollutants in urban stormwater: occurrence, concentrations, and atmospheric contributions for a wide range of contaminants in three French catchments	Environmental Science and Pollution Research (2014), Vol. 21, No. 8, pp. 5267	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
51	Ghafoor A. et al.	CA 7.1.2.1.1, CA 7.1.3.1	2011	Measurements and modeling of pesticide persistence in soil at the catchment scale.	The Science of the total environment, (2011), Vol. 409, No. 10, pp. 1900	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
52	Gigante P. et al.	CA 5.8.3	2018	Glyphosate affects swine ovarian and adipose stromal cell functions.	Animal reproduction science (2018), Vol. 195, pp. 185	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
53	Gjettermann B. et al.	CA 7.1.4.1.1	2011	Kinetics of Glyphosate Desorption from Mobilized Soil Particles.	Soil Science Society of America journal (2011), Vol. 75, No. 2, pp. 434	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
54	Gjettermann B. et al.	CA 7.1.4.1.1	2011	Evaluation of Sampling Strategies for Pesticides in a Macroporous Sandy Loam Soil.	Soil & sediment contamination (2011), Vol. 20, No. 5	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
55	Gomez Ortiz A. M. et al.	CA 7.1.3.1.1	2017	Sorption and desorption of glyphosate in Mollisols and Ultisols soils of Argentina.	Environmental toxicology and chemistry (2017), Vol. 36, No. 10, pp. 2587	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
56	Gorga A. et al.	CA 5.6	2020	In vitro effects of glyphosate and Roundup on Sertoli cell physiology.	Toxicology in vitro (2020), Vol. 62, pp. 104682	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
57	Gregoire C. et al.	CA 7.5	2010	Use and fate of 17 pesticides applied on a vineyard catchment.	International Journal of Environmental Analytical Chemistry (2010), Vol. 90, No. 3/6, pp. 406	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
58	Hamann E. et al.	CA 7.5	2016	The fate of organic micropollutants during long-term/long-distance river bank filtration	Science of the Total Environment (2016), Vol. 545-546, pp. 629	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
59	Hanke I. et al.	CA 7.5	2010	Relevance of urban glyphosate use for surface water quality.	Chemosphere (2010), Vol. 81, No. 3, pp. 422	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
60	Hao Y. et al.	CA 5.8.1	2019	Roundup-Induced AMPK/mTOR-Mediated Autophagy in Human A549 Cells.	Journal of agricultural and food chemistry (2019), Vol. 67, No. 41, pp. 11364	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
61	Hedegaard M. J. et al.	CA 7.5	2014	Microbial pesticide removal in rapid sand filters for drinking water treatment-potential and kinetics.	Water research (2014), Vol. 48, pp. 71	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
62	Houtman C. J. et al.	CA 7.5	2013	A multicomponent snapshot of pharmaceuticals and pesticides in the river Meuse basin	Environmental Toxicology and Chemistry (2013), Vol. 32, No. 11, pp. 2449	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
63	Huntscha S. et al.	CA 7.5	2018	Seasonal Dynamics of Glyphosate and AMPA in Lake Greifensee: Rapid Microbial Degradation in the Epilimnion During Summer.	Environmental science & technology, (2018), Vol. 52, No. 8, pp. 4641	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
64	Ilyushina N. A. et al.	CA 5.4	2018	Comparative investigation of genotoxic activity of glyphosate technical products in the micronucleus test in vivo.	Toksikologicheskii Vestnik (2018), No. 4, pp. 24	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
65	Ilyushina N. A. et al.	CA 5.4	2019	Maximum tolerated doses and erythropoiesis effects in the mouse bone marrow by 79 pesticides' technical materials assessed with the micronucleus assay.	Toxicology Reports (2019), Vol. 6, pp. 105	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
66	Imfeld G.	CA 7.5	2013	Transport and attenuation of dissolved glyphosate and AMPA in a stormwater wetland.	Chemosphere (2013), Vol. 90, No. 4, pp. 1333	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
67	Jodeh S. et al.	CA 7.1.3.1.1	2014	Fate and mobility of glyphosate leachate in palestinian soil using soil column	Journal of Materials and Environmental Science (2014) Vol. 5, No. 6, pp. 2008	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
68	Joensson J. et al.	CA 7.5	2013	Removal and degradation of glyphosate in water treatment: a review.	Journal of Water Supply Research and Technology (2013), Vol. 62, No. 7, pp. 395	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
69	Johansson H. et al.	CA 5.6	2018	Exposure to a glyphosate-based herbicide formulation, but not glyphosate alone, has only minor effects on adult rat testis.	Reproductive toxicology (2018), Vol. 82, pp. 25	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
70	Kanissery R. G. et al.	CA 7.1.2.1.1, CA 7.1.2.1.3, CA 7.1.3.1.1	2015	Effect of soil aeration and phosphate addition on the microbial bioavailability of carbon-14-glyphosate.	Journal of environmental quality (2015), Vol. 44, No. 1, pp. 137	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
71	Karanasios E. et al.	CA 7.5	2018	Monitoring of glyphosate and AMPA in soil samples from two olive cultivation areas in Greece: aspects related to spray operators activities	Environmental Monitoring and Assessment (2018), Vol. 190, No. 6, pp. 1	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
72	Karise R. et al.	CA 6.10.1	2017	Are pesticide residues in honey related to oilseed rape treatments?.	Chemosphere (2017), Vol. 188, pp. 389	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
73	Kasuba V. et al.	CA 5.4	2017	Effects of low doses of glyphosate on DNA damage, cell proliferation and oxidative stress in the HepG2 cell line.	Environmental science and pollution research international (2017), Vol. 24, No. 23, pp. 19267	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
74	Kegel Schoonenberg F. et al.	CA 7.5	2010	Reverse osmosis followed by activated carbon filtration for efficient removal of organic micropollutants from river bank filtrate.	Water science and technology (2010) Vol. 61, No. 10, pp. 2603	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
75	Kjaer J. et al.	CA 7.1.4.3	2011	Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils.	Chemosphere (2011), Vol. 84, No. 4, pp. 471	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
76	Koller V. J. et al.	CA 5.4	2012	Cytotoxic and DNA-damaging properties of glyphosate and Roundup in human-derived buccal epithelial cells.	Archives of toxicology (2012), Vol. 86, No. 5, pp. 805	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
77	Kongtip P. et al.	CA 5.9	2017	Glyphosate and Paraquat in Maternal and Fetal Serums in Thai Women.	Journal of agromedicine (2017), Vol. 22, No. 3, pp. 282	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
78	Kumar S. et al.	CA 5.3	2014	Glyphosate-rich air samples induce IL-33, TSLP and generate IL-13 dependent airway inflammation.	Toxicology (2014), Vol. 325, pp. 42	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
79	Kwiatkowska M. et al.	CA 5.4	2017	DNA damage and methylation induced by glyphosate in peripheral blood mononuclear cells (in vitro study)	Food and chemical toxicology (2017), Vol. 105, pp. 93	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
80	Kwiatkowska M. et al.	CA 5.8.1	2020	Evaluation of apoptotic potential of glyphosate metabolites and impurities in human peripheral blood mononuclear cells (in vitro study).	Food and chemical toxicology (2020) Vol. 135, pp. 110888	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
81	Lamprea K. et al.	CA 7.5	2011	Pollutant concentrations and fluxes in both stormwater and wastewater at the outlet of two urban watersheds in Nantes (France)	Urban Water Journal (2011), Vol. 8, no. 4, pp. 219	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
82	Larsbo M. et al.	CA 7.5	2016	Surface Runoff of Pesticides from a Clay Loam Field in Sweden.	Journal of environmental quality, (2016), Vol. 45, No. 4, pp. 1367	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
83	Lefrancq M. et al.	CA 7.5	2017	High frequency monitoring of pesticides in runoff water to improve understanding of their transport and environmental impacts.	The Science of the total environment, (2017), Vol. 587-588, pp. 75	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
84	Lerch R. N. et al.	CA 7.5	2017	Vegetative buffer strips for reducing herbicide transport in runoff: effects of buffer width, vegetation, and season.	Journal of the American Water Resources Association (2017), Vol. 53, No. 3, pp. 667	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
85	Levine S. L. et al.	CA 8.2.2, CA 8.2.5	2015	Aminomethylphosphonic acid has low chronic toxicity to Daphnia magna and Pimephales promelas.	Environmental toxicology and chemistry (2015), Vol. 34, No. 6, pp. 1382	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
86	Litz N. T. et al.	CA 7.5	2011	Comparative studies on the retardation and reduction of glyphosate during subsurface passage.	Water research, (2011), Vol. 45, No. 10, pp. 3047	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
87	Maillard E. et al.	CA 7.5	2014	Pesticide mass budget in a stormwater wetland.	Environmental science & technology (2014), Vol. 48, No. 15, pp. 8603	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
88	Maillard E. et al.	CA 7.5	2011	Removal of pesticide mixtures in a stormwater wetland collecting runoff from a vineyard catchment.	The Science of the total environment, (2011), Vol. 409, No. 11, pp. 2317	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
89	Malaguerra F. et al.	CA 7.5	2012	Pesticides in water supply wells in Zealand, Denmark: A statistical analysis.	Science of the Total Environment, (2012), Vol. 414, pp. 433	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
90	Malaguerra F. et al.	CA 7.5	2013	Assessment of the contamination of drinking water supply wells by pesticides from surface water resources using a finite element reactive transport model and global sensitivity analysis techniques	Journal of hydrology (2013), Vol. 476, pp. 321	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
91	Manas F. et al.	CA 5.4	2013	Oxidative stress and comet assay in tissues of mice administered glyphosate and ampa in drinking water for 14 days.	Journal of Basic and Applied Genetics (2013), Vol. 24, No. 2, pp. 67	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
92	Manassero A. et al.	CA 7.5	2010	Glyphosate degradation in water employing the H2O2/UVC process.	Water research (2010), Vol. 44, No. 13, pp. 3875	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
93	Manservigi F. et al.	CA 5.6	2019	The Ramazzini Institute 13-week pilot study glyphosate-based herbicides administered at human-equivalent dose to Sprague Dawley rats: effects on development and endocrine system.	Environmental health (2019), Vol. 18, No. 1, pp. 15	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
94	Martin J. et al.	CA 7.5	2013	Sugarcane, herbicides and water pollution in Reunion Island: achievements and perspectives after ten years of monitoring.	Journees Internationales sur la Lutte contre les Mauvaises Herbes, (2013), pp. 641	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
95	Martinez A. et al.	CA 5.7	2019	Effects of glyphosate and aminomethylphosphonic acid on an isogenic model of the human blood-brain barrier.	Toxicology letters (2019), Vol. 304, pp. 39	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
96	Martinez M. A. et al.	CA 5.7	2018	Neurotransmitter changes in rat brain regions following glyphosate exposure.	Environmental research (2018), Vol. 161, pp. 212	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
97	Masiol M. et al.	CA 7.5	2018	Herbicides in river water across the northeastern Italy: occurrence and spatial patterns of glyphosate, aminomethylphosphonic acid, and glufosinate ammonium.	Environmental science and pollution research international (2018), Vol. 25, No. 24, pp. 24368	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
98	McGuire M. K. et al.	CA 5.9	2016	Glyphosate and aminomethylphosphonic acid are not detectable in human milk.	The American journal of clinical nutrition (2016), Vol. 103, No. 5, pp. 1285	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
99	McManus S. et al.	CA 7.5	2014	Pesticide occurrence in groundwater and the physical characteristics in association with these detections in Ireland	Environmental Monitoring and Assessment (2014), Vol. 186, No. 11, pp. 7819	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
100	Mesnage R. et al.	CA 5.3	2018	Comparison of transcriptome responses to glyphosate, isoxaflutole, quizalofop-p-ethyl and mesotrione in the HepaRG cell line.	Toxicology reports (2018), Vol. 5, pp. 819	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
101	Mesnage R. et al.	CA 5.8	2018	Ignoring Adjuvant Toxicity Falsifies the Safety Profile of Commercial Pesticides.	Frontiers in Public Health (2018), Vol. 5, pp. 361	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
102	Mesnage R. et al.	CA 5.8.3	2017	Evaluation of estrogen receptor alpha activation by glyphosate-based herbicide constituents.	Food and chemical toxicology (2017) Vol. 108, No. Pt A, pp. 30	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
103	Meyer B. et al.	CA 7.5	2011	Concentrations of dissolved herbicides and pharmaceuticals in a small river in Luxembourg	Environmental Monitoring and Assessment (2011), Vol. 180, No. 1-4, pp. 127	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
104	Milic M. et al.	CA 5.3	2018	Oxidative stress, cholinesterase activity, and DNA damage in the liver, whole blood, and plasma of Wistar rats following a 28-day exposure to glyphosate.	Arhiv za higijenu rada i toksikologiju (2018), Vol. 69, No. 2, pp. 154	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
105	Moertl M. et al.	CA 7.5	2013	Determination of glyphosate residues in Hungarian water samples by immunoassay	Microchemical Journal (2013), Vol. 107, pp. 143	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
106	Mottes C. et al.	CA 7.5	2017	Relationships between past and present pesticide applications and pollution at a watershed outlet: The case of a horticultural catchment in Martinique, French West Indies.	Chemosphere (2017), Vol. 184, pp. 762	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
107	Munira S. et al.	CA 7.1.3.1.1	2016	Phosphate fertilizer impacts on glyphosate sorption by soil.	Chemosphere (2016), Vol. 153, pp. 471	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
108	Munira S. et al.	CA 7.1.3.1.1	2017	Sorption and desorption of glyphosate, MCPA and tetracycline and their mixtures in soil as influenced by phosphate.	Journal of environmental science and health. Part B, Pesticides, food contaminants, and agricultural wastes (2017), Vol. 52, No. 12, pp. 887	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
109	Munira S. et al.	CA 7.1.3.1.1	2017	Phosphate and glyphosate sorption in soils following long-term phosphate applications	Geoderma (2017), Vol. 313, pp. 146	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
110	Nagy K. et al.	CA 5.4	2019	Comparative cyto- and genotoxicity assessment of glyphosate and glyphosate-based herbicides in human peripheral white blood cells.	Environmental research (2019), Vol. 179, No. Pt B, pp. 108851	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
111	Napoli M. et al.	CA 7.1.4.2	2015	Leaching of Glyphosate and Aminomethylphosphonic Acid through Silty Clay Soil Columns under Outdoor Conditions.	Journal of environmental quality, (2015), Vol. 44, No. 5, pp. 1667	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
112	Napoli M. et al.	CA 7.5	2016	Transport of Glyphosate and Aminomethylphosphonic Acid under Two Soil Management Practices in an Italian Vineyard.	Journal of environmental quality, (2016), Vol. 45, No. 5, pp. 1713	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
113	Nghia Nguyen Khoi et al.	CA 7.1.2.1.1	2013	Soil properties governing biodegradation of the herbicide glyphosate in agricultural soils.	Proceedings of the 24th Asian-Pacific Weed Science Society Conference (2013), pp. 312	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
114	Norgaard T. et al.	CA 7.1.2.1.1	2015	Can Simple Soil Parameters Explain Field-Scale Variations in Glyphosate-, Bromoxyniloctanoate-, Diflufenican-, and Bentazone Mineralization?	Water, air, and soil pollution (2015), Vol. 226, No. 8, pp. 262	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
115	Norgaard T. et al.	CA 7.5	2014	Leaching of Glyphosate and Aminomethylphosphonic Acid from an Agricultural Field over a Twelve-Year Period	Vadose Zone Journal (2014), Vol. 13, No. 10, pp. 18	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
116	Pahwa M. et al.	CA 5.5	2019	Glyphosate use and associations with non-Hodgkin lymphoma major histological sub-types: findings from the North American Pooled Project.	Scandinavian journal of work, environment & health (2019), Vol. 1; No. 45, pp. 600	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
117	Panzacchi S. et al.	CA 5.6	2018	The Ramazzini Institute 13-week study on glyphosate-based herbicides at humanequivalent dose in Sprague Dawley rats: study design and first in-life endpoints evaluation	Environmental Health (2018), Vol. 17, pp. 52/1	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
118	Passeport E. et al.	CA 7.1.2.2.1	2014	Dynamics and mitigation of six pesticides in a "Wet" forest buffer zone.	Environmental science and pollution research international (2014), Vol. 21, No. 7, pp. 4883	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
119	Perego M. C. et al.	CA 5.6	2017	Evidence for direct effects of glyphosate on ovarian function: glyphosate influences steroidogenesis and proliferation of bovine granulosa but not theca cells in vitro.	Journal of applied toxicology (2017), Vol. 37, No. 6, pp. 692	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
120	Petersen J. et al.	CA 7.5	2012	Sampling of herbicides in streams during flood events.	Journal of environmental monitoring (2012), Vol. 14, No. 12, pp. 3284	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
121	Pham Thu H. et al.	CA 5.6	2019	Perinatal Exposure to Glyphosate and a Glyphosate-Based Herbicide Affect Spermatogenesis in Mice.	Toxicological sciences (2019), Vol. 169, No. 1, pp. 260	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
122	Poiger T. et al.	CA 7.5	2017	Occurrence of the herbicide glyphosate and its metabolite AMPA in surface waters in Switzerland determined with on-line solid phase extraction LC-MS/MS.	Environmental science and pollution research international (2017), Vol. 24, No. 2, pp. 1588	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
123	Presutti R. et al.	CA 5.5	2016	Pesticide exposures and the risk of multiple myeloma in men: An analysis of the North American Pooled Project.	International Journal of Cancer (2016), Vol. 139, No. 8, pp. 1703	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
124	Rampoldi E. A. et al.	CA 7.1.2.1.1, CA 7.1.3.1.1	2014	Carbon-14-glyphosate behavior in relationship to pedoclimatic conditions and crop sequence.	Journal of environmental quality, (2014), Vol. 43, No. 2, pp. 558	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
125	Ramwell C. T. et al.	CA 7.5	2014	Contribution of household herbicide usage to glyphosate and its degradate aminomethylphosphonic acid in surface water drains.	Pest management science (2014) Vol. 70, No. 12, pp. 1823	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
126	Rasmussen S. B. et al.	CP 9.2.4	2015	Effects of single rainfall events on leaching of glyphosate and bentazone on two different soil types, using the DAISY model	Vadose Zone Journal (2015), Vol. 14, No. 11, pp. 15	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCP 9
127	Ravier S. et al.	CA 7.5	2019	Monitoring of Glyphosate, Glufosinate-ammonium, and (Aminomethyl) phosphonic acid in ambient air of Provence-Alpes-Cote-d'Azur Region, France.	Atmospheric Environment (2019), Vol. 204, pp. 102	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
128	Ren Xin et al.	CA 5.6	2019	Effects of chronic glyphosate exposure to pregnant mice on hepatic lipid metabolism in offspring.	Environmental pollution (2019), Vol. 254, No. Pt A, pp. 112906	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
129	Reoyo-Prats B. et al.	CA 7.5	2017	Multicontamination phenomena occur more often than expected in Mediterranean coastal watercourses: Study case of the Tet River (France)	Science of the Total Environment (2017), Vol. 579, pp. 10	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
130	Rosenbom A. et al.	CA 7.5	2015	Pesticide leaching through sandy and loamy fields - Long-term lessons learnt from the Danish Pesticide Leaching Assessment Programme	Environmental Pollution (2015), Vol. 201, pp. 75	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
131	Roustan A. et al.	CA 5.4	2014	Genotoxicity of mixtures of glyphosate and atrazine and their environmental transformation products before and after photoactivation.	Chemosphere (2014), Vol. 108, pp. 93	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
132	Rubio F. et al.	CA 6.10.1	2014	Survey of Glyphosate Residues in Honey, Corn and Soy Products	Journal of Environmental and Analytical Toxicology (2014), Vol. 5, pp. 249	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
133	Ruel S. M. et al.	CA 7.5	2011	On-site evaluation of the removal of 100 micro-pollutants through advanced wastewater treatment processes for reuse applications.	Water Science and Technology (2011), Vol. 63, No. 11, pp. 2486	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
134	Ruel S. M. et al.	CA 7.5	2012	Occurrence and fate of relevant substances in wastewater treatment plants regarding Water Framework Directive and future legislations	Water Science and Technology (2012), Vol. 65, No. 7, pp. 1179	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
135	Sabatier P. et al.	CA 7.5	2014	Long-term relationships among pesticide applications, mobility, and soil erosion in a vineyard watershed.	Proceedings of the National Academy of Sciences of the United States of America (2014), Vol. 111, No. 44, pp. 15647	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
136	Sanchis J. et al.	CA 7.5	2012	Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by on-line solid-phase extraction followed by liquid chromatography coupled to tandem mass spectrometry.	Analytical and bioanalytical chemistry (2012), Vol. 402, No. 7, pp. 2335	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
137	Sanchis J. et al.	CA 7.5	2012	Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by on-line solid-phase extraction followed by liquid chromatography coupled to tandem mass spectrometry [Erratum to document cited in CA156:223888]	Analytical and Bioanalytical Chemistry (2012), Vol. 404, No. 2, pp. 617	5.4.1 case a) relevant and provides data for the risk assessment: Erratum to summary that is provided in MCA 7 (Sanchis et al.)
138	Santovito A. et al.	CA 5.4	2018	In vitro evaluation of genomic damage induced by glyphosate on human lymphocytes.	Environmental science and pollution research international (2018), Vol. 25, No. 34, pp. 34693	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
139	Schnabel K. et al.	CA 6.4.2	2017	Effects of glyphosate residues and different concentrate feed proportions on performance, energy metabolism and health characteristics in lactating dairy cows.	Archives of animal nutrition (2017) Vol. 71, No. 6, pp. 413	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
140	Schreiner V. C. et al.	CA 7.5	2016	Pesticide mixtures in streams of several European countries and the USA	Science of the Total Environment (2016), Vol. 573, pp. 680	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
141	Schweizer M. et al.	CA 8.2.1	2019	How glyphosate and its associated acidity affect early development in zebrafish (Danio rerio).	PeerJ (2019), Vol. 7, pp. e7094	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
142	Shehata A. A. et al.	CA 6.4.1	2014	Distribution of Glyphosate in Chicken Organs and its Reduction by Humic Acid Supplementation.	Journal of Poultry Science (2014) Vol. 51, No. 3, pp. 333	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
143	Shelver W. L. et al.	CA 6.4.2	2018	Distribution of Chemical Residues among Fat, Skim, Curd, Whey, and Protein Fractions in Fortified, Pasteurized Milk	ACS Omega (2018), Vol. 3, No. 8, pp. 8697	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
144	Shen Y. et al.	CA 7.5	2011	Ozonation of herbicide glyphosate	Huanjing Kexue Xuebao (2011), Vol. 31, pp. 1647	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
145	Sidoli P. et al.	CA 7.1.3.1.1, CA 7.1.3.1.2	2016	Glyphosate and AMPA adsorption in soils: laboratory experiments and pedotransfer rules.	Environmental science and pollution research international (2016), Vol. 23, No. 6, pp. 5733	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
146	Sierra-Diaz E. et al.	CA 5.9	2019	Urinary pesticide levels in children and adolescents residing in two agricultural communities in Mexico	International Journal of Environmental Research and Public Health (2019), Vol. 16, No. 4, pp. 562	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
147	Silva V. et al.	CA 7.5	2018	Distribution of glyphosate and aminomethylphosphonic acid (AMPA) in agricultural topsoils of the European Union	Science of the total environment (2018), Vol. 15, pp. 1352	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
148	Skeff W. et al.	CA 7.1.3.1.1, CA 7.1.3.1.2	2018	Adsorption behaviors of glyphosate, glufosinate, aminomethylphosphonic acid, and 2-aminoethylphosphonic acid on three typical Baltic Sea sediments.	Marine Chemistry (2018) ,Vol. 198, pp. 1	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
149	Sorahan T.	CA 5.5	2015	Multiple myeloma and glyphosate use: a re-analysis of US Agricultural Health Study (AHS) data.	International journal of environmental research and public health, (2015) Vol. 12, No. 2, pp. 1548	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
150	Steinborn A. et al.	CA 5.9	2016	Determination of Glyphosate Levels in Breast Milk Samples from Germany by LC-MS/MS and GC-MS/MS.	Journal of agricultural and food chemistry (2016), Vol. 64, No. 6, pp. 1414	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
151	Stenrod M.	CA 7.5	2015	Long-term trends of pesticides in Norwegian agricultural streams and potential future challenges in northern climate	Acta Agriculturae Scandinavica, Section B - Soil & Plant Science (2015), Vol. 65, pp. 199	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
152	Suarez-Larios K. et al.	CA 5.4	2017	Screening of Pesticides with the Potential of Inducing DSB and Successive Recombinational Repair.	Journal of Toxicology (2017), Article ID 3574840	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
153	Sun M. et al.	CA 7.1.1.1	2019	Degradation of glyphosate and bioavailability of phosphorus derived from glyphosate in a soil-water system	Water research (2019), Vol. 163, pp. 114840	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
154	Syedkolaei-Gholami S. J. et al.	CA 8.2.1	2013	Toxicity evaluation of Malathion, Carbaryl and Glyphosate in common carp fingerlings (Cyprinus carpio, Linnaeus, 1758).	Journal of Veterinary Research (2013), Vol. 68, No. 3, pp. 257	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
155	Szekacs A.	CA 7.5	2015	Monitoring Pesticide Residues in Surface and Ground Water in Hungary: Surveys in 1990-2015	Journal of chemistry (2015), Article ID 717948	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
156	Szekacs A.	CA 7.5	2014	Monitoring and biological evaluation of surface water and soil micropollutants in Hungary	Carpathian Journal of Earth and Environmental Sciences (2014), Vol. 9, No. 3, pp. 47	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
157	Tang J. et al.	CA 5.3	2017	Ion Imbalance Is Involved in the Mechanisms of Liver Oxidative Damage in Rats Exposed to Glyphosate.	Frontiers in physiology (2017), Vol. 8, pp. 1083	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
158	Tang T. et al.	CA 7.5	2015	Quantification and characterization of glyphosate use and loss in a residential area.	The Science of the total environment (2015), Vol. 517, pp. 207	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
159	Tevez H. R.	CA 7.1.3.1.1, CA 7.1.3.1.2	2015	pH dependence of Glyphosate adsorption on soil horizons.	Boletín de la sociedad geológica Mexicana (2015), Vol. 67, No. 3, pp. 509	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
160	Thompson H. M. et al.	CA 8.3.1.3, CP 10.3.1.5	2014	Evaluating exposure and potential effects on honeybee brood (<i>Apis mellifera</i>) development using glyphosate as an example.	Integrated environmental assessment and management (2014), Vol. 10, No. 3, pp. 463	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
161	Thompson T. S. et al.	CA 6.10.1	2019	Determination of glyphosate, AMPA, and glufosinate in honey by online solid-phase extraction-liquid chromatography-tandem mass spectrometry.	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment (2019) Vol. 36, No. 3, pp. 434	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
162	Thongprakaisang S. et al.	CA 5.8.3	2013	Glyphosate induces human breast cancer cells growth via estrogen receptors.	Food and chemical toxicology (2013), Vol. 59, pp. 129	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
163	Tian Y. et al.	CA 8.2.7.	2015	Growth inhibition of two herbicides on <i>Spirodela polyrrhiza</i>	Nongyao Kexue Yu Guanli (2015), Vol. 36, pp. 61	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
164	Todorovic G. et al.	CA 7.1.2.2.1	2014	Influence of soil tillage and erosion on the dispersion of glyphosate and aminomethylphosphonic acid in agricultural soils	International agrophysics (2014), Vol. 28, No. 1, pp. 93	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
165	Townsend M. et al.	CA 5.4	2017	Evaluation of various glyphosate concentrations on DNA damage in human Raji cells and its impact on cytotoxicity.	Regulatory toxicology and pharmacology (2017), Vol. 85, pp. 79	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
166	Trasande L. et al.	CA 5.9	2020	Glyphosate exposures and kidney injury biomarkers in infants and young children.	Environmental pollution (2020), Vol. 256, pp. 113334	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
167	Ulen B. M. et al.	CA 7.1.4.3	2014	Spatial variation in herbicide leaching from a marine clay soil via subsurface drains.	Pest management science (2014), Vol. 70, No. 3, pp. 405	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
168	Ulen B. M. et al.	CA 7.1.4.3	2012	Particulate-facilitated leaching of glyphosate and phosphorus from a marine clay soil via tile drains.	Acta agriculturae Scandinavica (2012), Vol. 62, pp. 241	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
169	Vanlaeys A. et al.	CA 5.8	2018	Formulants of glyphosate-based herbicides have more deleterious impact than glyphosate on TM4 Sertoli cells.	Toxicology in vitro (2018), Vol. 52, pp. 14.	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
170	Vialle C. et al.	CA 7.5	2013	Pesticides in roof runoff: study of a rural site and a suburban site.	Journal of environmental management (2013), Vol. 120, pp. 48	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
171	von Meroy G. et al.	CA 8.4.1, CA 8.4.2.1, CA 8.5	2016	Glyphosate and aminomethylphosphonic acid chronic risk assessment for soil biota	Environmental toxicology and chemistry (2016), Vol. 35, pp. 2742	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 8
172	von Soosten D. et al.	CA 6.4.2	2016	Excretion pathways and ruminal disappearance of glyphosate and its degradation product aminomethylphosphonic acid in dairy cows.	Journal of dairy science (2016), Vol. 99, No. 7, pp. 5318	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6
173	Wang L. et al.	CA 5.5	2019	Glyphosate induces benign monoclonal gammopathy and promotes multiple myeloma progression in mice.	Journal of hematology & oncology. (2019), Vol. 12, No. 1, pp. 70	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
174	Wang S. et al.	CA 7.2.2.3	2016	(Bio)degradation of glyphosate in water-sediment microcosms - A stable isotope co-labeling approach.	Water research (2016), Vol. 99, pp. 91	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
175	Wozniak E. et al.	CA 5.5	2019	Glyphosate affects methylation in the promoter regions of selected tumor suppressors as well as expression of major cell cycle and apoptosis drivers in PBMCs (in vitro study).	Toxicology in vitro (2019), Vol. 63, pp. 104736	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
176	Zgheib S. et al.	CA 7.5	2012	Priority pollutants in urban stormwater: Part 1 - Case of separate storm sewers	Water Research (2012), Vol. 46, No. 20, pp. 6683	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
177	Zhang J. et al.	CA 5.6	2019	The toxic effects and possible mechanisms of glyphosate on mouse oocytes.	Chemosphere (2019), Vol. 237, pp. 124435	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 5
178	Zhelezova A. et al.	CA 7.1.2.1.1, CA 7.1.3.1.1	2017	Effect of Biochar Amendment and Ageing on Adsorption and Degradation of Two Herbicides.	Water, air, and soil pollution (2017) Vol. 228, No. 6, pp. 216	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 7
179	Zoller O. et al.	CA 6.9	2018	Glyphosate residues in Swiss market foods: monitoring and risk evaluation.	Food additives & contaminants. Part B, Surveillance (2018), Vol. 11, No. 2, pp. 83.	5.4.1 case a) relevant and provides data for the risk assessment: Summary is provided in MCA 6

Table 34: Relevant but supplementary (category B) articles after detailed assessment: sorted by data requirement(s)

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
357	CA 5.1	Hopa E. et al.	2011	The inhibitory effects of some pesticides on human erythrocyte glucose-6-phosphate dehydrogenase activity (in vitro).	Fresenius Environmental Bulletin (2011), Vol. 20, No. 5a, pp. 1314	5.4.1 case b) Relevant but supplementary information: glyphosate and 2,4-D had been used as test material from a "local pesticide shop". No further identification of the test material had been provided, moreover the study design is not well described.
421	CA 5.2.1	Lee GaWon et al.	2018	Glyphosate surfactant herbicide toxicosis in a dog with hindlimb paresis and urinary incontinence	Journal of Veterinary Clinics (2018), Vol. 35, No. 4, pp. 144	5.4.1 case b) Relevant but supplementary information: Acute Pet Exposure which should not impact the re-registration.
368	CA 5.3	Jasper R. et al.	2012	Evaluation of biochemical, hematological and oxidative parameters in mice exposed to the herbicide glyphosate-Roundup®.	Interdisciplinary toxicology (2012), Vol. 5, No. 3, pp. 133	5.4.1 case b) Relevant but supplementary information: Gavaged formulated product, effects not attributable to glyphosate.
409	CA 5.3	Larsen K. et al.	2014	Effects of Sublethal Exposure to a Glyphosate-Based Herbicide Formulation on Metabolic Activities of Different Xenobiotic-Metabolizing Enzymes in Rats.	International journal of toxicology (2014), Vol. 33, No. 4, pp. 307	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo via drinking water (Roundup FULL II, 662 g/L potassium salt). Non-representative formulation for EU.
432	CA 5.3	Lieschova M. A. et al.	2018	Combined effect of glyphosphate, saccharin and sodium benzoate on rats.	Regulatory Mechanisms in Biosystems (2018), Vol. 9, No. 4, pp. 591	5.4.1 case b) Relevant but supplementary information: Substantially lower water consumption in glyphosate only group confounds data and makes endpoint comparisons meaningless.
535	CA 5.3	Rebai O. et al.	2017	Morus alba leaf extract mediates neuroprotection against glyphosate-induced toxicity and biochemical alterations in the brain.	Environmental science and pollution research international (2017), Vol. 24, No. 10, pp. 9605	5.4.1 case b) Relevant but supplementary information: Formulation administered via i.p. injection (described as a commercial formulation registered in the Tunisian Ministry of Agriculture).
606	CA 5.3	Tizhe E. V. et al.	2014	Influence of zinc supplementation on histopathological changes in the stomach, liver, kidney, brain, pancreas and spleen during subchronic exposure of Wistar rats to glyphosate.	Comparative clinical pathology (2014), Vol. 23, No. 5, pp. 1535	5.4.1 case b) Relevant but supplementary information: Formulation tested (Bushfire, Monsanto Europe, 360 g/L glyphosate; 441 g/L potassium salt). Non-representative formulation for EU.
607	CA 5.3	Tizhe E. V. et al.	2013	Haematological changes induced by subchronic glyphosate exposure: ameliorative effect of zinc in Wistar rats.	Sokoto Journal of Veterinary Sciences (2013), Vol. 11, No. 2, pp. 28	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo (Bushfire, 441 g/L potassium salt, 360 g/L a.e.). Non-representative formulation for EU.
196	CA 5.4	Alvarez-Moya C. et al.	2014	Comparison of the in vivo and in vitro genotoxicity of glyphosate isopropylamine salt in three different organisms.	Genetics and molecular biology (2014), Vol. 37, No. 1, pp. 105	5.4.1 case b) Relevant but supplementary information: Mechanistic study without clear relevance for the risk assessment.
238	CA 5.4	Brusick D. et al.	2016	Genotoxicity Expert Panel review: weight of evidence evaluation of the genotoxicity of glyphosate, glyphosate-based formulations, and aminomethylphosphonic acid.	Critical reviews in toxicology (2016), Vol. 46, No. sup1, pp. 56	5.4.1 case b) Relevant but supplementary information: review, secondary source.
250	CA 5.4	Carbajal-Lopez Y. et al.	2016	Biomonitoring of agricultural workers exposed to pesticide mixtures in Guerrero state, Mexico, with comet assay and micronucleus test	Environmental Science and Pollution Research (2016), Vol. 23, No. 3, pp. 2513	5.4.1 case b) Relevant but supplementary information: No glyphosate specific conclusions, confounded due to multiple pesticide uses.

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
286	CA 5.4	de Castilhos Ghisi N. et al.	2016	Does exposure to glyphosate lead to an increase in the micronuclei frequency? A systematic and meta-analytic review.	Chemosphere (2016), Vol. 145, pp. 42	5.4.1 case b) Relevant but supplementary information: No new data presented, only compilation of pooled glyphosate and formulated product meta-analyses.
388	CA 5.4	Kier L. D.	2015	Review of genotoxicity biomonitoring studies of glyphosate-based formulations.	Critical reviews in toxicology (2015), Vol. 45, No. 3, pp. 209	5.4.1 case b) Relevant but supplementary information: review, secondary source
389	CA 5.4	Kier L. D. et al.	2013	Review of genotoxicity studies of glyphosate and glyphosate-based formulations.	Critical reviews in toxicology (2013), Vol. 43, No. 4, pp. 283	5.4.1 case b) Relevant but supplementary information: review, secondary source.
437	CA 5.4	Lopez Gonzalez E. C. et al.	2017	Micronuclei and other nuclear abnormalities on Caiman latirostris (Broad-snouted caiman) hatchlings after embryonic exposure to different pesticide formulations.	Ecotoxicology and environmental safety (2017), Vol. 136, pp. 84	5.4.1 case b) Relevant but supplementary information: This study looks at the impact of pesticide formulations on the nuclear developments of Caimen embryos via topical application to their eggs shells after laying. The endpoints achieved cannot be related to EU risk assessment.
543	CA 5.4	Rodrigues H. G. et al.	2011	Effects of roundup pesticide on the stability of human erythrocyte membranes and micronuclei frequency in bone marrow cells of Swiss mice	Open Biology Journal (2011), Vol. 4, pp. 54	5.4.1 case b) Relevant but supplementary information: Substance identification is missing, the study is lacking statistically and moreover, a mixed study design has been presented where the micronuclei frequency had been investigated in mice after i.p. injection.
624	CA 5.4	Vera-Candioti J. et al.	2013	Single-cell gel electrophoresis assay in the ten spotted live-bearer fish, <i>Cnesterodon decemmaculatus</i> (Jenyns, 1842), as bioassay for agrochemical-induced genotoxicity.	Ecotoxicology and environmental safety (2013), Vol. 98, pp. 368	5.4.1 case b) Relevant but supplementary information: GBHs tested on fish
183	CA 5.5	Acquavella J. et al.	2018	Corrigendum to: Glyphosate epidemiology expert panel review: a weight of evidence systematic review of the relationship between glyphosate exposure and non-Hodgkin's lymphoma or multiple myeloma.	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp. 898	5.4.1 case b) Relevant but supplementary information: Corrigendum to Acquavella et al. 2016, Critical Reviews in Toxicology (2016), Vol. 46, sup1, pp. 28-43.
200	CA 5.5	Anon.	2018	Expression of Concern (26 September 2018): An Independent Review of the Carcinogenic Potential of Glyphosate.	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp. 981	5.4.1 case b) Relevant but supplementary information: Expression of concern regarding articles Williams et al. 2016, Crit Rev Toxicol (2016), 46(S1):3-20 and Solomon et al. 2016, Crit Rev Toxicol (2016), 46(S1):21-27 and Acquavella et al. 2016, Crit Rev Toxicol (2016), 46(S1):28-43 and Williams et al. 2016, Crit Rev Toxicol (2016), 46(S1):44-55. and Brusick et al. 2016, Crit Rev Toxicol (2016), 46(S1):56-74.
202	CA 5.5	Arjo G. et al.	2013	Plurality of opinion, scientific discourse and pseudoscience: an in depth analysis of the Seralini et al. study claiming that Roundup® Ready corn or the herbicide Roundup® cause cancer in rats.	Transgenic research (2013), Vol. 22, No. 2, pp. 255	5.4.1 case b) Relevant but supplementary information: Discussion providing context to a controversial retracted publication.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
220	CA 5.5	Bashir S. et al.	2012	Final review of the Seralini et al. (2012a) publication on a 2-year rodent feeding study with glyphosate formulations and GM maize NK603 as published online on 19 September 2012 in Food and Chemical Toxicology	EFSA Journal (2012), Vol. 10, No. 11, pp. 2986	5.4.1 case b) Relevant but supplementary information: EFSA review of Seralini chronic rat study.
221	CA 5.5	Bashir S. et al.	2012	Review of the Seralini et al. (2012) publication on a 2-year rodent feeding study with glyphosate formulations and GM maize NK603 as published online on 19 September 2012 in Food and Chemical Toxicology	EFSA Journal (2012), Vol. 10, No. 10, pp. 2910	5.4.1 case b) Relevant but supplementary information: EFSA review of Seralini chronic rat study.
226	CA 5.5	Berry C.	2018	The complexities of regulatory toxicology	Outlooks on Pest Management (2018), Vol. 29, No. 6, pp. 270	5.4.1 case b) Relevant but supplementary information: No new data presented.
227	CA 5.5	Berry C.	2013	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 430	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al._2012_Food Chemical Toxicol. (2012), retracted
239	CA 5.5	Brusick D. et al.	2018	Corrigendum to: Genotoxicity Expert Panel review: weight of evidence evaluation of the genotoxicity of glyphosate, glyphosate-based formulations, and aminomethylphosphonic acid.	Critical Reviews in Toxicology (2018), Vol. 46, No. 10, pp. 902	5.4.1 case b) Relevant but supplementary information: Corrigendum to Brusick et al._2016, Critical Reviews in Toxicology (2016), Vol. 46, sup1, pp. 56-74
240	CA 5.5	Burstyn I. et al.	2017	Visualizing the heterogeneity of effects in the analysis of associations of multiple myeloma with glyphosate use. comments on sorahan, t. multiple myeloma and glyphosate use: A re-analysis of us agricultural health study (AHS) data.	International Journal of Environmental Research and Public Health (2017), Vol. 14, No. 1, pp. 1	5.4.1 case b) Relevant but supplementary information: Re-analysis of old data, no statistically significant glyphosate findings. A re-analysis of US agricultural health study (AHS) data. Int. J. Environ. Res. Public Health (2015), Vol. 12, pp. 1548
241	CA 5.5	Bus J. S.	2017	IARC use of oxidative stress as key mode of action characteristic for facilitating cancer classification: Glyphosate case example illustrating a lack of robustness in interpretative implementation.	Regulatory toxicology and pharmacology (2017), Vol. 86, pp. 157	5.4.1 case b) Relevant but supplementary information: review, secondary source.
310	CA 5.5	Dung Le Tien et al.	2013	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 428	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al._2012_Food Chemical Toxicol (2012), retracted
338	CA 5.5	Greim H. et al.	2015	Evaluation of carcinogenic potential of the herbicide glyphosate, drawing on tumor incidence data from fourteen chronic/carcinogenicity rodent studies.	Critical reviews in toxicology (2015), Vol. 45, No. 3, pp. 185	5.4.1 case b) Relevant but supplementary information: review, secondary source.
341	CA 5.5	Grunewald W. et al.	2013	Comment on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 447	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al._2012_Food Chemical Toxicol. (2012), retracted

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
349	CA 5.5	Hammond B. et al.	2013	A Comment on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 444	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
353	CA 5.5	Heinemann J. A.	2013	Food and chemical toxicology.	Food and Chemical Toxicology (2013), Vol. 53, pp. 442	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
378	CA 5.5	Kachuri L. et al.	2013	Multiple pesticide exposures and the risk of multiple myeloma	International Journal of Cancer (2013), Vol. 133, No. 8, pp. 1846	5.4.1 case b) Relevant but supplementary information: Exposure to multiple pesticides and a case control study which is subject to recall bias.
415	CA 5.5	Le Tien D. et al.	2013	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize"	Food and Chemical Toxicology (2013), Vol. 53, pp. 443	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
449	CA 5.5	McClellan R. O.	2016	Evaluating the potential carcinogenic hazard of glyphosate.	Critical reviews in toxicology (2016), Vol. 46, No. sup1, pp. 1	5.4.1 case b) Relevant but supplementary information: Forward by Editor in Chief to a special edition on glyphosate in Critical Reviews in Toxicology.
451	CA 5.5	Mesnage R. et al.	2017	Multimics reveal non-alcoholic fatty liver disease in rats following chronic exposure to an ultra-low dose of Roundup herbicide.	Scientific reports (2017), Vol. 7, pp. 39328	5.4.1 case b) Relevant but supplementary information: Formulation tested (Roundup, composition not described). Livers obtained from research of republished retreated Seralini rat study.
480	CA 5.5	Nedopitanska N. M.	2011	Problem of the carcinogenic danger of glyphosate; new data	Sovremennyye Problemy Toksikologii (2011) No. 1-2, pp. 5	5.4.1 case b) Relevant but supplementary information: review, secondary source.
486	CA 5.5	Ollivier L.	2013	A Comment on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 458	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
521	CA 5.5	Portier C. J. et al.	2017	Re: Tarazona et al. (2017): Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC.	Archives of toxicology (2017), Vol. 91, No. 9, pp. 3195	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, ref to Tarazona et al. 2017, Archives of toxicology (2017), Vol. 91, No. 8, pp. 2723-2743.
540	CA 5.5	Resnik D. B.	2015	Retracting Inconclusive Research: Lessons from the Seralini GM Maize Feeding Study	Journal of agricultural & environmental ethics (2015), Vol. 28, No. 4, pp. 621	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
561	CA 5.5	Schinasi L. et al.	2014	Non-Hodgkin lymphoma and occupational exposure to agricultural pesticide chemical groups and active ingredients: a systematic review and meta-analysis.	International journal of environmental research and public health (2014), Vol. 11, No. 4, pp. 4449	5.4.1 case b) Relevant but supplementary information: This paper concerns a meta-analysis where the results were taken from available studies at face value. The authors had no way to correct for recall bias, confounding, etc. As the meta-RRs of the studies included are in error the meta-analyses are also in error. The study is considered unreliable.
564	CA 5.5	Seralini G-E. et al.	2013	Answers to critics: Why there is a long term toxicity due to a Roundup-tolerant genetically modified maize and to a Roundup herbicide	Food and Chemical Toxicology (2013), Vol. 53, pp. 476	5.4.1 case b) Relevant but supplementary information: Author responding to multiple Letters to the Editor.
579	CA 5.5	Solomon K. R.	2017	What is the problem with glyphosate?	Outlooks on Pest Management (2017), Vol. 28, No. 4, pp. 173	5.4.1 case b) Relevant but supplementary information: Review of IARC deficiencies.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
581	CA 5.5	Solomon K.R.	2018	Corrigendum to: Glyphosate in the general population and in applicators: a critical review of studies on exposures.	Critical Reviews in Toxicology (2018), Vol 48, No 10, pp. 896	5.4.1 case b) Relevant but supplementary information: Corrigendum to Solomon et al._2016, Critical Reviews in Toxicology (2016), 46, suppl., pp. 21-27.
585	CA 5.5	Sorahan T.	2016	Visualising and thinking and interpreting. Response to the Burstyn and de Ros comments on Sorahan "Multiple myeloma and glyphosate use: A re-analysis of us agricultural health study (AHS) data".	International Journal of Environmental Research and Public Health (2016), Vol. 14, No. 1, pp. E6	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Response to Burstyn et al. on Sorahan et al._2015, Int. J. Environ. Res. Public Health (2015), Vol. 12, pp. 1548-1559.
592	CA 5.5	Stipicevic S.	2017	Some organophosphate insecticides and herbicides	Arhiv Za Higijenu Rada i Toksikologiju (2017), Vol. 68, No. 2, pp. A10	5.4.1 case b) Relevant but supplementary information: Commentary on IARC evaluation.
600	CA 5.5	Tarazona J. V. et al.	2017	Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC.	Archives of toxicology (2017), Vol. 91, No. 8, pp. 2723	5.4.1 case b) Relevant but supplementary information: Comparison of EU regulatory review with IARC evaluation.
601	CA 5.5	Tarazona J. V. et al.	2017	Response to the reply by C. J. Portier and P. Clausen, concerning our review "Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC".	Archives of toxicology (2017), Vol. 91, No. 9, pp. 3199	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, ref to Portier et al_2017_Arch Toxicol (2017), Vol. 91, No. 9, pp. 3195-3197.
602	CA 5.5	Tarone R. E.	2018	On the International Agency for Research on Cancer classification of glyphosate as a probable human carcinogen	European journal of cancer prevention (2018), Vol. 27, No. 1, pp. 82	5.4.1 case b) Relevant but supplementary information: review, secondary source.
611	CA 5.5	Tribe D.	2013	Serious inadequacies regarding the pathology data presented in the paper by Seralini et al. (2012).	Food and Chemical Toxicology (2013), Vol. 53, pp. 452	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al._2012_Food Chemical Toxicol (2012), retracted.
634	CA 5.5	Williams G. M.	2018	Corrigendum to: Glyphosate rodent carcinogenicity bioassay expert panel review (Critical Reviews in Toxicology, (2016), 46, suppl., (44-55), 10.1080/10408444.2016.1214679)	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp. 914	5.4.1 case b) Relevant but supplementary information: Corrigendum to article Williams_2016, Critical reviews in toxicology (2016), Vol. 46, No. suppl 1, pp. 4
635	CA 5.5	Williams G. M. et al.	2016	Glyphosate rodent carcinogenicity bioassay expert panel review.	Critical reviews in toxicology (2016), Vol. 46, No. suppl 1, pp. 44	5.4.1 case b) Relevant but supplementary information: review, secondary source.
636	CA 5.5	Williams G. M. et al.	2018	Corrigendum: A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment.	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp. 907	5.4.1 case b) Relevant but supplementary information: Corrigendum to: A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment (Critical Reviews in Toxicology, (2016), 46, suppl 1, pp. 3-20.)

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
182	CA 5.6	Abou-Amer W. L. et al.	2010	Teratological effects induced by three pesticides in pregnant rats	Alexandria Journal of Pharmaceutical Sciences (2010), Vol. 24, No. 1, pp. 21	5.4.1 case b) Relevant but supplementary information: Supportive only: Study is done with pesticide formulations with only one dose per pesticide treatment group established. The study contains insufficient data, therefore supplementary only.
224	CA 5.6	Belle R. et al.	2012	Letter to the Editor: Toxicity of Roundup and glyphosate.	Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 4, pp. 233	5.4.1 case b) Relevant but supplementary information: Response to Letter to the Editor, comments on Williams et al. 2012, J. Toxicol. Environ. Health B Crit. Rev (2012), Vol. 15, No. 1, pp. 39-96.
246	CA 5.6	Cai W. et al.	2017	Effects of glyphosate exposure on sperm concentration in rodents: A systematic review and meta-analysis.	Environmental toxicology and pharmacology (2017), Vol. 55, pp. 148	5.4.1 case b) Relevant but supplementary information: Re-evaluation of pooled literature data.
282	CA 5.6	de Almeida L. L. et al.	2017	Effects of melatonin in rats in the initial third stage of pregnancy exposed to sub-lethal doses of herbicides.	Acta histochemica (2017), Vol. 119, No. 3, pp. 220	5.4.1 case b) Relevant but supplementary information: Formulation tested at high doses of 500 mg/kg bw/day (Roundup), therefore supplementary only.
293	CA 5.6	Defarge N. et al.	2012	Letter to the Editor: Developmental and reproductive outcomes of Roundup and Glyphosate in humans and animals.	Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 7, pp. 433	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, reaction on Williams et al. 2012, Toxicol. Environ. Health B Crit. Rev. 15(1):39-96.
299	CA 5.6	DeSesso J. M. et al.	2012	Letter to the Editor: Toxicity of Roundup and Glyphosate response.	Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 4, pp. 236	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, response on Belle 2012, Journal of Toxicology and Environmental Health Part B Critical Reviews, (2012) Vol. 15, No. 4, pp. 233-235.
300	CA 5.6	DeSesso J. M. et al.	2012	Comment on "Glyphosate impairs male offspring reproductive development by disrupting gonadotropin expression".	Archives of Toxicology (2012), Vol. 86, No. 11, pp. 1791	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Romano et al. 2012, Arch Toxicol (2012), Vol. 86, No. 4, pp. 663-73.
301	CA 5.6	DeSesso J. M. et al.	2012	Response to the comments of Defarge and colleagues.	Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 7, pp. 438	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, reaction on Defarge et al. 2012, Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 7, pp. 433-437.
446	CA 5.6	Manfo F. P. T. et al.	2012	Effect of agropesticides use on male reproductive function: A study on farmers in Djutsa (Cameroon)	Environmental Toxicology (2012), Vol. 27, No. 7, pp. 423	5.4.1 case b) Relevant but supplementary information: No glyphosate specific conclusions, confounded due to multiple pesticide uses.
490	CA 5.6	Owagboriaye F. O. et al.	2017	Reproductive toxicity of Roundup herbicide exposure in male albino rat.	Experimental and toxicologic pathology (2017), Vol. 69, No. 7, pp. 461	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo (Roundup 441 g/L potassium salt, 360 g/L a.e.).
551	CA 5.6	Sakpa C. L. et al.	2018	Effects of glyphosate on sperm parameters and pregnancy success rate in Wistar rats.	Annals of Biomedical Sciences (2018), Vol. 17, No. 2, pp. 156	5.4.1 case b) Relevant but supplementary information: The glyphosate used is not sufficiently characterized, only two dose levels were tested and the number of animals used per dose level was too low. This publication is considered unreliable.
632	CA 5.6	Williams A. L. et al.	2012	Developmental and reproductive outcomes in humans and animals after glyphosate exposure: a critical analysis.	Journal of toxicology and environmental health. Part B, Critical reviews (2012), Vol. 15, No. 1, pp. 39	5.4.1 case b) Relevant but supplementary information: review, secondary source.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
457	CA 5.6.1	Milesi M. M. et al.	2018	Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Archives of toxicology (2018), Vol. 92, No. 8, pp. 2629	5.4.1 case b) Relevant but supplementary information: Glyphosate based herbicide (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.
458	CA 5.6.1	Milesi M. M. et al.	2019	Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Archives of toxicology (2019), Vol. 93, No. 12, pp. 3635	5.4.1 case b) Relevant but supplementary information: Glyphosate based herbicide (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.
518	CA 5.6.1	Plewis I.	2019	Comment on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Archives of toxicology (2019), Vol. 93, No. 1, pp. 207	5.4.1 case b) Relevant but supplementary information: Glyphosate based herbicide (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.
519	CA 5.6.1	Plewis I.	2020	Comment on response from Milesi et al. to 'Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats'.	Archives of toxicology (2020), Vol. 94, pp. 351	5.4.1 case b) Relevant but supplementary information: Glyphosate based herbicide (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.
623	CA 5.6.1	Velastegui-Espin G. P. et al.	2018	Glyphosate: its use and implications for human health. El glifosato: su uso e implicaciones en la salud humana.	Journal of the Selva Andina Biosphere (2018), Vol. 6, No. 2, pp. 86	5.4.1 case b) Relevant but supplementary information: review, secondary source of information.
394	CA 5.6.2	Kimmel G. L. et al.	2013	Evaluation of developmental toxicity studies of glyphosate with attention to cardiovascular development.	Critical reviews in toxicology (2013), Vol. 43, No. 2, pp. 79	5.4.1 case b) Relevant but supplementary information: review, secondary source.
318	CA 5.7	Feldman V.	2014	Neurodevelopmental toxicity: Still more questions than answers.	The Lancet Neurology (2014), Vol. 13, No. 7, pp. 645	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Grandjean et al. 2014, Lancet Neurol. 2014 Jul;13(7):648-9.
333	CA 5.7	Goldstein D. A. et al.	2014	Neurodevelopmental toxicity: Still more questions than answers.	The Lancet Neurology (2014), Vol. 13, No. 7, pp. 645	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Grandjean et al. 2014, Lancet Neurol (2014), Vol. 13, No. 7, pp. 648-9.
337	CA 5.7	Grandjean P. et al.	2014	Neurodevelopmental toxicity: Still more questions than answers - Authors' response.	The Lancet Neurology (2014), Vol. 13, No. 7, pp. 648	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, author responding to multiple Letters to Editors
189	CA 5.8	Ait Bali Y. et al.	2017	Behavioral and Immunohistochemical Study of the Effects of Subchronic and Chronic Exposure to Glyphosate in Mice.	Frontiers in behavioral neuroscience (2017), Vol. 11, pp. 146	5.4.1 case b) Relevant but supplementary information: Formulation tested (Roundup, 486 g/L isopropylamine salt, 360 g/L a.e.) in vivo.
215	CA 5.8	Baier C. J. et al.	2017	Behavioral impairments following repeated intranasal glyphosate-based herbicide administration in mice.	Neurotoxicology and teratology (2017), Vol. 64, pp. 63	5.4.1 case b) Relevant but supplementary information: Formulation tested via intranasal administration.
248	CA 5.8	Caloni F. et al.	2016	Suspected poisoning of domestic animals by pesticides.	The Science of the total environment (2016), Vol. 539, pp. 331	5.4.1 case b) Relevant but supplementary information: Review article on domestic animal poisonings by pesticides.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
284	CA 5.8	de Avila R. I. et al.	2017	In vitro assessment of skin sensitization, photosensitization and phototoxicity potential of commercial glyphosate-containing formulations.	Toxicology in vitro (2017), Vol. 45, No. 3, pp. 386	5.4.1 case b) Relevant but supplementary information: Non-validated model confirms glyphosate non-sensitized & non-photosensitizer. Formulation data inconsistent in non-validated model.
294	CA 5.8	Defarge N. et al.	2016	Co-Formulants in Glyphosate-Based Herbicides Disrupt Aromatase Activity in Human Cells below Toxic Levels.	International journal of environmental research and public health (2016), Vol. 13, No. 3, pp. 264	5.4.1 case b) Relevant but supplementary information: In vitro results not significant for glyphosate vs multiple formulations or mixtures.
317	CA 5.8	Farkas E. et al.	2018	Label-free optical biosensor for real-time monitoring the cytotoxicity of xenobiotics: A proof of principle study on glyphosate.	Journal of hazardous materials (2018), Vol. 351, pp. 80	5.4.1 case b) Relevant but supplementary information: in vitro cytotoxicity assays.
339	CA 5.8	Gress S. et al.	2015	Glyphosate-based herbicides potentially affect cardiovascular system in mammals: review of the literature.	Cardiovascular toxicology (2015), Vol. 15, No. 2, pp. 117	5.4.1 case b) Relevant but supplementary information: review, secondary source.
342	CA 5.8	Gui Y-X. et al.	2012	Glyphosate induced cell death through apoptotic and autophagic mechanisms.	Neurotoxicology and teratology (2012), Vol. 34, No. 3, pp. 344	5.4.1 case b) Relevant but supplementary information: Unrealistically high in vitro dosing in the mM range.
393	CA 5.8	Kim Y-h. et al.	2013	Mixtures of glyphosate and surfactant TN20 accelerate cell death via mitochondrial damage-induced apoptosis and necrosis.	Toxicology in vitro : an international journal published in association with BIBRA (2013), Vol. 27, No. 1, pp. 191	5.4.1 case b) Relevant but supplementary information: In vitro cytotoxicity endpoints measured for glyphosate & surfactant alone and in combination. No significant effects with glyphosate alone.
402	CA 5.8	Kurenbach B. et al.	2015	Sublethal exposure to commercial formulations of the herbicides dicamba, 2,4-dichlorophenoxyacetic acid, and glyphosate cause changes in antibiotic susceptibility in Escherichia coli and Salmonella enterica serovar Typhimurium.	mBio (2015), Vol. 6, No. 2, pp. E00009	5.4.1 case b) Relevant but supplementary information: Endpoints at doses tested not relevant to residues levels or to human health.
403	CA 5.8	Kwiatkowska M. et al.	2014	The effect of glyphosate, its metabolites and impurities on erythrocyte acetylcholinesterase activity.	Environmental toxicology and pharmacology (2014), Vol. 37, No. 3, pp. 1101	5.4.1 case b) Relevant but supplementary information: In vitro effects only noted at excessively high doses, 250-5000 uM.
452	CA 5.8	Mesnage R. et al.	2013	Ethoxylated adjuvants of glyphosate-based herbicides are active principles of human cell toxicity.	Toxicology (2013), Vol. 313, No. 2-3, pp. 122	5.4.1 case b) Relevant but supplementary information: Formulations, surfactants and glyphosate tested in vitro. Effects attributable to surfactant cytotoxicity.
453	CA 5.8	Mesnage R. et al.	2017	Facts and Fallacies in the Debate on Glyphosate Toxicity.	Frontiers in public health (2017), Vol. 5, pp. 316	5.4.1 case b) Relevant but supplementary information: review, secondary source.
454	CA 5.8	Mesnage R. et al.	2014	Major pesticides are more toxic to human cells than their declared active principles.	BioMed research international (2014), Vol. 2014, pp. 179691	5.4.1 case b) Relevant but supplementary information: In vitro cytotoxicity data at high doses not informative for hazard characterization.
553	CA 5.8	Salimiras D. A. et al.	2015	Glyphosate: The Fate and Toxicology of a Herbicidal Amino Acid Derivative.	Amino Acids in Higher Plants (2015), pp. 461	5.4.1 case b) Relevant but supplementary information: Overview of glyphosate toxicology and fate data.
584	CA 5.8	Song H-Y. et al.	2012	In vitro cytotoxic effect of glyphosate mixture containing surfactants.	Journal of Korean medical science (2012), Vol. 27, No. 7, pp. 711	5.4.1 case b) Relevant but supplementary information: In vitro mixture effects only, not glyphosate alone.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
194	CA 5.8.2	Alleva R. et al.	2018	Mechanism underlying the effect of long-term exposure to low dose of pesticides on DNA integrity.	Environmental Toxicology (2018), Vol. 33, No. 4, pp. 476	5.4.1 case b) Relevant but supplementary information: Purity and source not reported. No positive control. Only one or two concentrations of glyphosate were tested. Comparisons are to untreated cells rather than negative controls. The reliability of the study is unassignable.
198	CA 5.8.2	Andreotti G. et al.	2012	The interaction between pesticide use and genetic variants involved in lipid metabolism on prostate cancer risk	Journal of Cancer Epidemiology (2012), Article ID 358076, pp 1	5.4.1 case b) Relevant but supplementary information: Mechanism of measuring toxicity is not data requirement of (EC) 1107/2009; performed in a non-relevant test model.
199	CA 5.8.2	Anifandis G. et al.	2018	The effect of glyphosate on human sperm motility and sperm DNA fragmentation	International Journal of Environmental Research and Public Health (2018), Vol. 15, No. 6, pp. 1117/1	5.4.1 case b) Relevant but supplementary information: The glyphosate used is not characterized, only one test concentration was used, no positive control was considered and the results obtained are not corroborated by in vivo regulatory reproductive toxicology studies with much higher systemic levels of glyphosate. This publication is considered unreliable.
290	CA 5.8.2	Dechartres J. et al.	2019	Glyphosate and glyphosate-based herbicide exposure during the peripartum period affects maternal brain plasticity, maternal behaviour and microbiome	Journal of Neuroendocrinology (2019), Vol. 31, pp. e12731	5.4.1 case b) Relevant but supplementary information: The glyphosate used was not sufficiently characterized, only one dose level was tested, the number of animals used per dose level was too low (n = 7) and an unreliable technique for oral dosing was employed (injection of test item in cookies). This publication is considered unreliable.
291	CA 5.8.2	Dedeke G. A. et al.	2018	Comparative Assessment on Mechanism Underlying Renal Toxicity of Commercial Formulation of Roundup Herbicide and Glyphosate Alone in Male Albino Rat.	International Journal of Toxicology (2018), Vol. 37, No. 4, pp. 285	5.4.1 case b) Relevant but supplementary information: The glyphosate used was not sufficiently characterized, the number of animals used per dose level was too low, and the conduct of the biochemical tests and the analysis of glyphosate in kidney tissue was poorly described. Moreover, the results from the testing of the oxidative stress parameters seem not reliable. This publication is considered unreliable.
328	CA 5.8.2	Gencer N. et al.	2012	In vitro effects of some herbicides and fungicides on human erythrocyte carbonic anhydrase activity	Fresenius Environmental Bulletin (2012), Vol. 21, No. 3, pp. 549	5.4.1 case b) Relevant but supplementary information: Glyphosate tested was not sufficiently characterized, the conditions of the inhibition assay are incompletely reported, no positive control was used and the statistics are not well reported. This publication is considered unreliable.
356	CA 5.8.2	Honskii Y. I. et al.	2011	Effects of heavy metal salts and organophosphoric pesticides on protein metabolism in exposed white rats	Medichna Khimiya (2011), Vol. 13, No. 4, pp. 100	5.4.1 case b) Relevant but supplementary information: Mechanistic study without clear relevance for the risk assessment / glyphosate.
410	CA 5.8.2	Larsen K. et al.	2012	Effects of sub-lethal exposure of rats to the herbicide glyphosate in drinking water: glutathione transferase enzyme activities, levels of reduced glutathione and lipid peroxidation in liver, kidneys and small intestine.	Environmental toxicology and pharmacology (2012), Vol. 34, No. 3, pp. 811	5.4.1 case b) Relevant but supplementary information: Only 2 dose levels were used with only 4 animals per sex and per group. Effects were found on GSH in liver at sub-mg/kg bw dose levels which is not concordant with liver effects seen in regulatory toxicology studies performed at much higher dose levels. This publication is considered unreliable.

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424	CA 5.8.2	Lemma T. et al.	2019	Disruption of giant unilamellar vesicles mimicking cell membranes induced by the pesticides glyphosate and picloram	Biophysical chemistry (2019), Vol. 250, pp. 106176	5.4.1 case b) Relevant but supplementary information: Novel assays and endpoints not applicable/reliable for risk assessment.
455	CA 5.8.2	Mesnage R. et al.	2015	Potential toxic effects of glyphosate and its commercial formulations below regulatory limits.	Food and chemical toxicology (2015), Vol. 84, pp. 133	5.4.1 case b) Relevant but supplementary information: review, secondary source.
489	CA 5.8.2	Owagboriaye F. et al.	2019	Comparative studies on endogenic stress hormones, antioxidant, biochemical and hematological status of metabolic disturbance in albino rat exposed to roundup herbicide and its active ingredient glyphosate.	Environmental science and pollution research international (2019), Vol. 26, No. 14, pp. 14502	5.4.1 case b) Relevant but supplementary information: Purity not reported. Test species are not clearly and completely described. Insufficient information is given on the biochemical methods used. This publication is considered unreliable.
534	CA 5.8.2	Razi M. et al.	2012	Histological and histochemical effects of Glyphosate on testicular tissue and function.	Iranian Journal of Reproductive Medicine (2012), Vol. 10, No. 3, pp. 181	5.4.1 case b) Relevant but supplementary information: No internationally accepted methods were used, only one dose level was considered, there was no characterisation of the test compound and the results are not corroborated by regulatory reproductive toxicity studies using much higher dose levels and longer times of exposure. This publication is considered unreliable.
537	CA 5.8.2	Ren X. et al.	2018	Effects of glyphosate on the ovarian function of pregnant mice, the secretion of hormones and the sex ratio of their fetuses.	Environmental pollution (2018), Vol. 243, No. Pt B, pp. 833	5.4.1 case b) Relevant but supplementary information: Glyphosate purity not reported. Only one dose level for glyphosate was tested (0.5% solution added to drinking water (it is unclear what actual dose was administered per day)). The number of animals used per dose level was too low. Insufficient information is given on the biochemical methods used. This publication is considered unreliable.
639	CA 5.8.2	Wrobel M. H.	2018	Glyphosate affects the secretion of regulators of uterine contractions in cows while it does not directly impair the motoric function of myometrium in vitro.	Toxicology and applied pharmacology (2018), Vol. 349, pp. 55	5.4.1 case b) Relevant but supplementary information: Glyphosate used is not sufficiently characterized and the analysis of glyphosate, hormones and prostaglandins is not sufficiently documented. This publication is considered unreliable.
666	CA 5.8.2	Zhao W. et al.	2011	Effect of glyphosate on oxidative damage of mice	Dulixue Zazhi (2011), Vol. 25, No. 5, pp. 364	5.4.1 case b) Relevant but supplementary information: No new information relevant for the risk assessment.
235	CA 5.8.3	Brennan J. C. et al.	2016	Development of a recombinant human ovarian (BG1) cell line containing estrogen receptor α and β for improved detection of estrogenic/antiestrogenic chemicals	Environmental Toxicology and Chemistry (2016), Vol. 35, No. 1, pp. 91	5.4.1 case b) Relevant but supplementary information: Limited data on glyphosate.
306	CA 5.8.3	Drasar P. et al.	2018	Glyphosate, an important endocrine disruptor Glyfosat - Dulezity endokrinni disruptor.	Diabetologie Metabolismus Endokrinologie Vyziva (2018), Vol. 21, No. 2, pp. 93	5.4.1 case b) Relevant but supplementary information: review, secondary source.
346	CA 5.8.3	Haggard D. E. et al.	2018	Erratum to High-Throughput H295R Steroidogenesis Assay: Utility as an Alternative and a Statistical Approach to Characterize Effects on Steroidogenesis.	Toxicological Sciences (2018), Vol. 164, No. 2, pp. 646	5.4.1 case b) Relevant but supplementary information: Erratum to Haggard et al. 2018, Toxicological Sciences (2018), Vol. 162, No. 2, pp. 509-534.

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347	CA 5.8.3	Haggard D. E. et al.	2018	High-throughput H295R steroidogenesis assay: utility as an alternative and a statistical approach to characterize effects on steroidogenesis	Toxicological Sciences (2018), Vol. 162, No. 2, pp. 509	5.4.1 case b) Relevant but supplementary information: ToxCast data for high throughput H295R assay not available on glyphosate, presumably because it is not soluble in DMSO.
496	CA 5.8.3	Palma G.	2011	Letter to the editor regarding the article by Paganelli et al.	Chemical research in toxicology (2011), Vol. 24, No. 6, pp. 775	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, reply to Paganelli et al. 2010, Chem. Res. Toxicol. (2010), Vol. 23, pp. 1586-1595.
498	CA 5.8.3	Pandey A. et al.	2015	Analysis of endocrine disruption effect of Roundup® in adrenal gland of male rats.	Toxicology reports (2015), Vol. 2, pp. 1075	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo (Roundup, 41%, India).
515	CA 5.8.3	Pinto C. L. et al.	2018	Identification of candidate reference chemicals for in vitro steroidogenesis assays	Toxicology In Vitro (2018), Vol. 47, pp. 103	5.4.1 case b) Relevant but supplementary information: review, secondary source.
587	CA 5.8.3	Sritana N. et al.	2018	Glyphosate induces growth of estrogen receptor alpha positive cholangiocarcinoma cells via non-genomic estrogen receptor/ERK1/2 signaling pathway.	Food and chemical toxicology (2018), Vol. 118, pp. 595	5.4.1 case b) Relevant but supplementary information: The results showed that glyphosate has the same potency as Estradiol (E2) when tested at extremely low concentrations. This has not been corroborated by other ED studies. This publication is considered unreliable.
665	CA 5.8.3	Zhao H. et al.	2018	Effects of Glyphosate on Testosterone Synthesis in Male Rats.	Asian Journal of Ecotoxicology (2018), Vol. 13, No. 5, pp. 242	5.4.1 case b) Relevant but supplementary information: Reporting of the experimental conditions is not complete.
217	CA 5.9	Bando H. et al.	2010	Extreme hyperkalemia in a patient with a new glyphosate potassium herbicide poisoning: report of a case.	The Japanese journal of toxicology (2010), Vol. 23, No. 3, pp. 246	5.4.1 case b) Relevant but supplementary information: This case report describes severe hyperkalemia in the setting of suicidal ingestion of potassium salt glyphosate formulations. This is not unexpected.
228	CA 5.9	Beswick E. et al.	2011	Fatal poisoning with glyphosate-surfactant herbicide.	Journal of the Intensive Care Society (2011), Vol. 12, No. 1, pp. 37	5.4.1 case b) Relevant but supplementary information: This is a case of a young man who deliberately ingested glyphosate product at home and rapidly developed multi-organ failure, culminating in death. No new observations.
264	CA 5.9	Chau A. M. T. et al.	2011	More Data on the Effect of Haemoperfusion for Acute Poisoning Is Required.	Blood Purification (2011), Vol. 31, No. 1-3, pp. 41	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Gil et al. 2010, Blood Purif (2010), Vol. 30, No. 2, pp. 84-8.
350	CA 5.9	Han S. K. et al.	2010	Use of a lipid emulsion in a patient with refractory hypotension caused by glyphosate-surfactant herbicide.	Clinical toxicology (2010), Vol. 48, No. 6, pp. 566	5.4.1 case b) Relevant but supplementary information: This is a case report of a suicidal ingestion of formulated glyphosate that was treated with lipid emulsion and symptoms improved. As this is a description of medical management of a suicidal overdose, this should not impact re-registration
444	CA 5.9	Malhotra R. C. et al.	2010	Glyphosate-surfactant herbicide-induced reversible encephalopathy.	Journal of clinical neuroscience (2010), Vol. 17, No. 11, pp. 1472	5.4.1 case b) Relevant but supplementary information: This paper describes prolonged encephalopathy in a suicidal glyphosate ingestion. There is no mention of the medication that was used for sedation while the patient was intubated in the ICU. Accumulations of lorazepam and other sedatives may result in prolonged coma. In formulated glyphosate overdose with multi-organ failure it is common to sedate patients until their haemodynamics improve. As

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						this document encompasses suicidal overdose, this paper should not impact re-registration.
469	CA 5.9	Moon J. M. et al.	2010	Predicting acute complicated glyphosate intoxication in the emergency department.	Clinical toxicology (2010), Vol. 48, No. 7, pp. 718	5.4.1 case b) Relevant but supplementary information: The results of this study showed that age > 50 years, X-ray abnormalities, and ALT > 40 U/L were significant predictive factors for complications in patients with glyphosate surfactant herbicide poisoning; patients with these findings might require admission to the intensive care unit.
497	CA 5.9	Pan LiPing et al.	2016	Analysis of liver index of workers exposed to glyphosate	Journal of Environmental & Occupational Medicine (2016), Vol. 33, No. 4, pp. 380	5.4.1 case b) Relevant but supplementary information: This article examined the liver function in 345 workers exposed to glyphosate through manufacturing and 345 controls. The sample size is small, and it was claimed that there was a statistically significant difference between cholinesterase levels between groups. This is not related to glyphosate as it is not a cholinesterase inhibitor. It was also found that there were markers of liver pathology on ultrasound, which wouldn't be related to glyphosate as this has been extensively evaluated through GLP studies.
505	CA 5.9	Park J-S. et al.	2013	Incidence, etiology, and outcomes of rhabdomyolysis in a single tertiary referral center	Journal of Korean Medical Science (2013), Vol. 28, No. 8, pp. 1194	5.4.1 case b) Relevant but supplementary information: This article only mentions glyphosate in the reference section. One reference specifically discusses rhabdomyolysis with intramuscular injection of formulated glyphosate.
542	CA 5.9	Roberts D. M. et al.	2010	A prospective observational study of the clinical toxicology of glyphosate-containing herbicides in adults with acute self-poisoning.	Clinical toxicology (2010), Vol. 48, No. 2, pp. 129	5.4.1 case b) Relevant but supplementary information: This paper is a prospective study of outcomes of suicidal ingestions of glyphosate based herbicides. It shows that the mortality rate from overdose is 3.2%. This paper supports the idea that low-toxicity pesticides have a lower mortality rate than higher toxicity products.
560	CA 5.9	Sato C. et al.	2011	Aseptic meningitis in association with glyphosate-surfactant herbicide poisoning.	Clinical toxicology (2011), Vol. 49, No. 2, pp. 118	5.4.1 case b) Relevant but supplementary information: This article evaluates the case of a woman who presented in multi-organ failure 2 days after a formulated glyphosate overdose. Meningitis was suspected and the patient was found to have a high level of glyphosate in CSF. The claim is that glyphosate can cause aseptic meningitis and neurotoxicity. Glyphosate is hydrophilic and cannot cross cell membranes without active transport. It is well known that hypoxia and inflammatory changes can disrupt the tight junctions of the blood brain barrier which may allow passage of substances into the CSF. IL-6 is a known marker of inflammation. This is perhaps the mechanism through which they were able to measure glyphosate in the CSF. Since this paper is about a suicidal ingestion it should have no impact on re-registration.
563	CA 5.9	Seok S-J. et al.	2011	Surfactant volume is an essential element in human toxicity in acute glyphosate herbicide intoxication.	Clinical toxicology (2011), Vol. 49, No. 10, pp. 892	5.4.1 case b) Relevant but supplementary information: Results indicate that treatment of patients with acute glyphosate herbicide intoxication should take into account the volume and not the type of surfactants in herbicide formulations.
565	CA 5.9	Shaw G. M. et al.	2014	Early pregnancy agricultural pesticide exposures and risk of gastroschisis among	Birth Defects Research, Part A: Clinical and Molecular	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
566	CA 5.9	Shaw W.	2017	offspring in the San Joaquin Valley of California Elevated Urinary Glyphosate and Clostridia Metabolites With Altered Dopamine Metabolism in Triplets With Autistic Spectrum Disorder or Suspected Seizure Disorder: A Case Study.	Teratology (2014), Vol. 100, No. 9, pp. 686 Integrative medicine (2017), Vol. 16, No. 1, pp. 50	5.4.1 case b) Relevant but supplementary information: This is a limited case study of 3 individuals, with minimal data on glyphosate exposure.
201	CA 5.9.1	Aris A.	2012	Response to comments from Monsanto scientists on our study showing detection of glyphosate and Cry1Ab in blood of women with and without pregnancy	Reproductive Toxicology (2012), Vol. 33, No. 1, pp. 122	5.4.1 case b) Relevant but supplementary information: Correspondence with no new data.
281	CA 5.9.1	Dang Q. et al.	2011	Control Effect of Occupational Hazards in Construction Project of Glyphosate Production	Chinese Journal of Public Health Engineering (2011), Vol. 10, no. 2, pp. 111	5.4.1 case b) Relevant but supplementary information: This is a paper describing the evaluation of a glyphosate production facility and a description of how to mitigate risks of exposure to the chemistries involved in glyphosate production.
334	CA 5.9.1	Goldstein D. A. et al.	2012	Comment: Aris and Leblanc "Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada".	Reproductive Toxicology (2012), Vol. 33, No. 1, pp. 120	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, comments on Aris et al. 2011, Reprod. Toxicol (2011), Vol. 31, pp. 528-533.
373	CA 5.9.1	Jomichen J. et al.	2017	Australian work exposures studies: occupational exposure to pesticides.	Occupational and environmental medicine (2017), Vol. 74, No. 1, pp. 46	5.4.1 case b) Relevant but supplementary information: Occupational exposure survey.
398	CA 5.9.1	Knudsen L. E. et al.	2017	Biomonitoring of Danish school children and mothers including biomarkers of PBDE and glyphosate.	Reviews on environmental health (2017), Vol. 32, No. 3, pp. 279	5.4.1 case b) Relevant but supplementary information: All glyphosate levels many orders of magnitude lower than the ADI.
456	CA 5.9.1	Mesnage R. et al.	2012	Glyphosate exposure in a farmer's family.	Journal of Environmental Protection (2012), Vol. 3, No. 9, pp. 1001	5.4.1 case b) Relevant but supplementary information: Glyphosate measured in urine of farmer and family.
459	CA 5.9.1	Mills P. J. et al.	2017	Excretion of the Herbicide Glyphosate in Older Adults Between 1993 and 2016.	Journal of the American Medical Association (2017), Vol. 318, No. 16, pp. 1610	5.4.1 case b) Relevant but supplementary information: Not relevant for EU toxicology risk assessment but supplementary information on human exposure.
460	CA 5.9.1	Mills P. J. et al.	2018	Excretion of the herbicide glyphosate in older adults between 1993 and 2016 (vol 318, pg 1610, 2017)	Journal of the American Medical Association (2018), Vol. 319, No. 13, pp. 1386	5.4.1 case b) Relevant but supplementary information: Correction to Mills et al. 2017, Journal of the American Medical Association (2017), Vol. 318, No. 16, pp. 1610-1611.
473	CA 5.9.1	Mueller U. et al.	2012	Comment on "Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada".	Reproductive Toxicology (2012), Vol. 33, No. 3, pp. 401	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Aris et al. 2011, Reprod. Toxicol (2011), Vol. 31, pp. 528-533.
657	CA 5.9.1	Zhang F. et al.	2019	Study on the effect of occupational exposure to glyphosate on blood routine.	Chinese journal of industrial hygiene and occupational diseases (2019), Vol. 37, No. 2, pp. 126	5.4.1 case b) Relevant but supplementary information: No adverse outcome identified.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
242	CA 5.9.2	Bus J. S.	2015	Analysis of Moms Across America report suggesting bioaccumulation of glyphosate in U.S. mother's breast milk: Implausibility based on inconsistency with available body of glyphosate animal toxicokinetic, human biomonitoring, and physico-chemical data.	Regulatory toxicology and pharmacology (2015), Vol. 73, No. 3, pp. 758	5.4.1 case b) Relevant but supplementary information: review, secondary source.
249	CA 5.9.2	Campuzano C. et al.	2017	Efectos de la intoxicación por glifosato en la población agrícola: revisión de tema	Revista CES Salud Publica (2017), Vol. 8, No. 1, pp. 121	5.4.1 case b) Relevant but supplementary information: This article claims that occupational exposure to glyphosate formulations is associated with multi-organ toxicity via suicidal ingestions and a literature review to support their claim. In suicide attempts, glyphosate based formulations are known to cause caustic injury leading to multi-organ failure. However, occupational exposures do not, nor do they lead to chronic long term effects. The Ag Health Study from 2005 & 2018 demonstrate no evidence of carcinogenicity. The Farm Family Exposure Study shows that there is minimal absorption of glyphosate in the occupational setting.
268	CA 5.9.2	Cho Y. S. et al.	2018	The qSOFA Score: A Simple and Accurate Predictor of Outcome in Patients with Glyphosate Herbicide Poisoning.	Basic & clinical pharmacology & toxicology (2018), Vol. 123, No. 5, pp. 615	5.4.1 case b) Relevant but supplementary information: This study is describing the use of a scoring system to predict severity of outcome after patients present with a formulated glyphosate overdose. This is meant to guide clinical practice and should not impact re-registration.
312	CA 5.9.2	Elsner P. et al.	2018	Occupational koebnerization of psoriasis caused by glyphosate.	Journal der Deutschen Dermatologischen Gesellschaft = Journal of the German Society of Dermatology (2018), Vol. 16, No. 1, pp. 70	5.4.1 case b) Relevant but supplementary information: There is not a mechanism for glyphosate to cause psoriasis, particularly 1 week post exposure.
314	CA 5.9.2	Eriguchi M. et al.	2019	Parkinsonism Relating to Intoxication with Glyphosate.	Internal medicine (2019), Vol. 58, No. 13, pp. 1935	5.4.1 case b) Relevant but supplementary information: (Reversible) Parkinsonism in case of acute in-toxication is a well-known effect and not specific for glyphosate.
323	CA 5.9.2	Frappart M. et al.	2011	A fatal acute poisoning with glyphosate: importance of gastrointestinal toxicity. Original title: Une intoxication aigue fatale au glyphosate : importance de la toxicite digestive.	Annales francaises d'anesthesie et de reanimation (2011), Vol. 30, No. 11, pp. 852	5.4.1 case b) Relevant but supplementary information: This case report describes caustic injury to the GI tract and multi-organ failure after formulated glyphosate overdose. The clinical course is consistent with previous reports of overdose and should not impact re-registration.
335	CA 5.9.2	Goldstein D. A. et al.	2018	Reversible Parkinsonism following glyphosate exposure.	Parkinsonism and Related Disorders (2018), Vol. 56, pp. 107	5.4.1 case b) Relevant but supplementary information: Letter ref to Zheng et al. 2018, Parkinsonism Relat Disord. (2018), Vol. 56, pp.108.
369	CA 5.9.2	Jayasumana C. et al.	2014	Glyphosate, hard water and nephrotoxic metals: are they the culprits behind the epidemic of chronic kidney disease of unknown etiology in Sri Lanka?.	International journal of environmental research and public health (2014), Vol. 11, No. 2, pp. 2125	5.4.1 case b) Relevant but supplementary information: Presents a hypothesis which is not tested, only discussed.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
370	CA 5.9.2	Jayasumana C. et al.	2015	Simultaneous exposure to multiple heavy metals and glyphosate may contribute to Sri Lankan agricultural nephropathy.	BMC nephrology (2015), Vol. 16, pp. 103	5.4.1 case b) Relevant but supplementary information: Presents a hypothesis which is not tested, only discussed
382	CA 5.9.2	Karberg K. et al.	2018	Glyphosate levels in older adults.	JAMA - Journal of the American Medical Association (2018), Vol. 319, No. 13, pp. 1384	5.4.1 case b) Relevant but supplementary information: Medical data which should not impact the re-registration.
387	CA 5.9.2	Khot R. et al.	2018	Glyphosate poisoning with acute fulminant hepatic failure.	Asia Pacific Journal of Medical Toxicology (2018), Vol. 7, No. 3, pp. 86	5.4.1 case b) Relevant but supplementary information: glyphosate is not hepatotoxic by any route.
408	CA 5.9.2	Langrand J. et al.	2019	Increased severity associated with talloamine in acute glyphosate poisoning.	Clinical toxicology (2020), Vol. 58, pp. 201	5.4.1 case b) Relevant but supplementary information: In this study, severe respiratory symptoms were also more frequently reported in the TA group. The surfactant properties of POEA are likely to cause aspiration pneumonia which is a plausible explanation for the respiratory failure complicating severe GBF poisoning cases.
422	CA 5.9.2	Lee M-J. et al.	2019	Hemodynamic changes after infusion of intravenous lipid emulsion to treat refractory hypotension caused by glyphosate-surfactant herbicide poisoning. A case report.	Medicine (2019), Vol. 98, No. 3, pp. Article No.: e14156	5.4.1 case b) Relevant but supplementary information: This is an article describing the use of lipid emulsion in a suicidal overdose of formulated glyphosate. This has been well described in the literature as a possible intervention in critically ill patients.
448	CA 5.9.2	Mariager T. P. et al.	2013	Severe adverse effects related to dermal exposure to a glyphosate-surfactant herbicide.	Clinical toxicology (2013), Vol. 51, No. 2, pp. 111	5.4.1 case b) Relevant but supplementary information: No new effects are discussed in the publication. Adverse effects of formulations in case of dermal exposure are well known. The data should not impact the re-registration.
461	CA 5.9.2	Mills P. J. et al.	2018	Erratum: Excretion of the herbicide glyphosate in older adults between 1993 and 2016.	Journal of the American Medical Association (2018), Vol. 319, No. 13, pp. 1386	5.4.1 case b) Relevant but supplementary information: Erratum listing undisclosed conflicts of interest on a previous paper, Mills 2017, Journal of the American Medical Association (2017), Vol. 318, No. 16, pp. 1610-1611.
462	CA 5.9.2	Mills P. J. et al.	2020	Glyphosate Excretion is Associated With Steatohepatitis and Advanced Liver Fibrosis in Patients With Fatty Liver Disease.	Clinical gastroenterology and hepatology (2020), Vol. 8, pp. 741	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment. This paper should not impact the re-registration.
463	CA 5.9.2	Mills P. J. et al.	2018	Undisclosed conflicts of interest	Journal of the American Medical Association (2018), Vol. 319, No. 13, pp. 1386	5.4.1 case b) Relevant but supplementary information: Correction to Mills et al. 2017, Journal of the American Medical Association 2017, Vol. 318, No. 16, pp. 1610-1611.
470	CA 5.9.2	Moon J. M. et al.	2018	Cardiovascular Effects and Fatality May Differ According to the Formulation of Glyphosate Salt Herbicide.	Cardiovascular toxicology (2018), Vol. 18, No. 1, pp. 99	5.4.1 case b) Relevant but supplementary information: Preliminary results without investigation of other factors contributing to such effects.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
483	CA 5.9.2	Niemann L. et al.	2015	A critical review of glyphosate findings in human urine samples and comparison with the exposure of operators and consumers.	Journal fuer Verbraucherschutz und Lebensmittelsicherheit/Journal of Consumer Protection and Food Safety (2015), Vol. 10, No. 1, pp. 3	5.4.1 case b) Relevant but supplementary information: review, secondary source.
495	CA 5.9.2	Palli E. et al.	2011	Rapture of the large intestine caused by severe oral glyphosate-surfactant intoxication.	The American journal of emergency medicine (2011), Vol. 29, No. 4, pp. 459	5.4.1 case b) Relevant but supplementary information: This article describes corrosive injury to the transverse colon in a suicidal ingestion of formulated glyphosate. This is known to occur in suicidal overdoses and should not impact re-registration
538	CA 5.9.2	Rendon-von Osten J. et al.	2017	Glyphosate Residues in Groundwater, Drinking Water and Urine of Subsistence Farmers from Intensive Agriculture Localities: A Survey in Hopelchen, Campeche, Mexico.	International journal of environmental research and public health (2017), Vol. 14, No. 6, pp. E595	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment.
568	CA 5.9.2	Shrestha S. et al.	2018	Incident thyroid disease in female spouses of private pesticide applicators.	Environment International (2018), Vol. 118, pp. 282	5.4.1 case b) Relevant but supplementary information: Very superficial information about exposure to specific pesticides. Limitations in assessment of potential confounding factors. Limitations in exposure and outcome information. This publication is considered unreliable.
580	CA 5.9.2	Solomon K. R.	2016	Glyphosate in the general population and in applicators: a critical review of studies on exposures.	Critical reviews in toxicology (2016), Vol. 46, No. sup1, pp. 21	5.4.1 case b) Relevant but supplementary information: review, secondary source.
658	CA 5.9.2	Zhang F. et al.	2018	Relationships between internal and external exposure indicators of glyphosate in occupational workers.	Journal of Environmental & Occupational Medicine (2018), Vol. 35, No. 11, pp. 990	5.4.1 case b) Relevant but supplementary information: Manufacturing practices in China are not representative of EU manufacturing protocols
668	CA 5.9.2	Zheng Q. et al.	2018	Reversible Parkinsonism induced by acute exposure glyphosate.	Parkinsonism & related disorders (2018), Vol. 50, pp. 121	5.4.1 case b) Relevant but supplementary information: Reversible Parkinsonism in case of acute in-toxication is a well-known effect and not specific for glyphosate.
669	CA 5.9.2	Zheng Q. et al.	2018	Reply for the comment on "Reversible Parkinsonism induced by acute exposure glyphosate".	Parkinsonism and Related Disorders (2018), Vol. 56, pp. 108	5.4.1 case b) Relevant but supplementary information: Letter to the editor, comments on Goldstein_2018, Parkinsonism Relat Disord. (2018), Vol. 56, pp. 107
184	CA 5.9.4	Acquavella J. et al.	2016	Glyphosate epidemiology expert panel review: a weight of evidence systematic review of the relationship between glyphosate exposure and non-Hodgkin's lymphoma or multiple myeloma.	Critical reviews in toxicology (2016), Vol. 46, No. sup1, pp. 28	5.4.1 case b) Relevant but supplementary information: review, secondary source.
208	CA 5.9.4	Avgerinou C. et al.	2017	Occupational, dietary, and other risk factors for myelodysplastic syndromes in Western Greece.	Hematology (2017), Vol. 22, No. 7, pp. 419	5.4.1 case b) Relevant but supplementary information: A case-control study with non-blind interviewers results in both potential recall bias and interviewer bias. This publication is considered unreliable.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
210	CA 5.9.4	Avila-Vazquez M. et al.	2015	Cancer and detrimental reproductive effects in an Argentine agricultural community environmentally exposed to glyphosate. Original Title: Cancer y trastornos reproductivos en una poblacion agricola argentina expuesta a glifosato.	Journal of Biological Physics and Chemistry (2015), Vol. 15, No. 3, pp. 97	5.4.1 case b) Relevant but supplementary information: There is no glyphosate use associations quantified, confounded by multiple pesticide uses, other local industry and local sanitation questions.
222	CA 5.9.4	Beard J. D. et al.	2014	Pesticide exposure and depression among male private pesticide applicators in the agricultural health study.	Environmental Health Perspectives (2014), Vol. 122, No. 9, pp. 984	5.4.1 case b) Relevant but supplementary information: No statistically significant findings for glyphosate.
223	CA 5.9.4	Beard J. D. et al.	2013	Pesticide exposure and self-reported incident depression among wives in the Agricultural Health Study	Environmental Research (2013), Vol. 126, pp. 31	5.4.1 case b) Relevant but supplementary information: No statistically significant findings for glyphosate.
243	CA 5.9.4	Caballero M. et al.	2018	Estimated Residential Exposure to Agricultural Chemicals and Premature Mortality by Parkinson's Disease in Washington State.	International journal of environmental research and public health (2018), Vol. 15, No. 12, pp. 1	5.4.1 case b) Relevant but supplementary information: Unproven exposure. Uncertain temporal relationship between purported exposure and the health outcome. Appropriate design would evaluate exposure or non-exposure from Parkinson's diagnosis and compare length of survival by exposure category.
247	CA 5.9.4	Cai W. et al.	2020	Correlation between CYP1A1 polymorphisms and susceptibility to glyphosate-induced reduction of serum cholinesterase: A case-control study of a Chinese population.	Pesticide biochemistry and physiology (2020), Vol. 162, pp. 23	5.4.1 case b) Relevant but supplementary information: Untenable assumption for the genetic analyses: that ChE depression (viz., case status) is related to glyphosate. Note that ChE depression is not more likely among those with longest glyphosate employment tenure. Adequate description of study population is uncertain. Selection process not clearly described. Adequate description of exposure circumstances is uncertain. Description of workplaces lacking. Subjects could have worked primarily in producing raw materials. This publication is considered unreliable.
263	CA 5.9.4	Chang E. T. et al.	2016	Systematic review and meta-analysis of glyphosate exposure and risk of lymphohematopoietic cancers.	Journal of environmental science and health. Part B, Pesticides, food contaminants, and agricultural wastes (2016), Vol. 51, No. 6, pp. 402	5.4.1 case b) Relevant but supplementary information: The glyphosate meta-RRs took the results from the available studies at face value. The authors had no way to correct for recall bias, confounding, etc. Therefore, the meta-RRs are in error to the extent that the studies included in the meta-analysis are also in error. Chang and Delzell (2016) are clear on this point in their meta-analysis article. Accordingly glyphosate p-values and confidence intervals for the meta-RRs cannot be taken at face value because they incorporate systematic error or bias. Thus, the argument about the statistical significance/insignificance of the meta-RR for glyphosate is negated. One cannot calculate a valid p-value when there is uncontrolled systematic error (Greenland S. Randomization, statistics, and causal inference. Epidemiology 1990; 1:421-429).
272	CA 5.9.4	Conti C. L. et al.	2018	Pesticide exposure, tobacco use, poor self-perceived health and presence of chronic disease are determinants of depressive symptoms among coffee growers from Southeast Brazil	Psychiatry Research (2018), Vol. 260, pp. 187	5.4.1 case b) Relevant but supplementary information: Study is fraught with limitations including very poor statistical analysis. Outcome and exposures essentially concurrent. This publication is considered unreliable.

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
276	CA 5.9.4	Cremonese C. et al.	2017	Occupational exposure to pesticides, reproductive hormone levels and sperm quality in young Brazilian men	Reproductive Toxicology (2017), Vol. 67, pp. 174	5.4.1 case b) Relevant but supplementary information: Due to exposure/outcome temporal ambiguity and failure to control for other exposures in the evaluation of specific exposures. This publication is considered unreliable.
283	CA 5.9.4	de Araujo J. S. A. et al.	2016	Glyphosate and adverse pregnancy outcomes, a systematic review of observational studies.	BMC public health (2016), Vol. 16, pp. 472	5.4.1 case b) Relevant but supplementary information: review, secondary source.
320	CA 5.9.4	Fluegge K. et al.	2018	Environmental factors influencing the link between childhood ADHD and risk of adult coronary artery disease.	Medical Hypotheses (2018), Vol. 110, pp. 83	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment.
321	CA 5.9.4	Fluegge K. et al.	2016	Glyphosate Use Predicts Healthcare Utilization for ADHD in the Healthcare Cost and Utilization Project net (HCUPnet): A Two-Way Fixed-Effects Analysis.	Polish Journal of Environmental Studies (2016), Vol. 25, No. 4, pp. 1489	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment.
322	CA 5.9.4	Fortes C. et al.	2016	Occupational Exposure to Pesticides With Occupational Sun Exposure Increases the Risk for Cutaneous Melanoma	Journal of occupational and environmental medicine (2016), Vol. 58, No. 4, pp. 370	5.4.1 case b) Relevant but supplementary information: No specific analyses for glyphosate. Interviewers were not blinded. Recall bias may produce spurious positive associations. Confounding not addressed adequately. This publication is considered unreliable.
332	CA 5.9.4	Goldner W. S. et al.	2013	Hypothyroidism and Pesticide Use Among Male Private Pesticide Applicators in the Agricultural Health Study	Journal of Occupational and Environmental Medicine (2013), Vol. 55, No. 10, pp. 1171	5.4.1 case b) Relevant but supplementary information: No correlation between effects and glyphosate use.
355	CA 5.9.4	Henneberger P. K. et al.	2014	Exacerbation of symptoms in agricultural pesticide applicators with asthma.	International archives of occupational and environmental health (2014), Vol. 87, No. 4, pp. 423	5.4.1 case b) Relevant but supplementary information: No adverse effects correlating with glyphosate use.
358	CA 5.9.4	Hoppin J. A. et al.	2017	Pesticides are Associated with Allergic and Non-Allergic Wheeze among Male Farmers.	Environmental health perspectives (2017), Vol. 125, No. 4, pp. 535	5.4.1 case b) Relevant but supplementary information: The exposure and outcome data were concurrent, so a temporal relationship could not be established. The extraordinary number of positive statistically significant findings mitigates against interpreting any one finding as likely to be causal. This publication is considered unreliable.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
399	CA 5.9.4	Kongtip P. et al.	2019	Thyroid Hormones in Conventional and Organic Farmers in Thailand.	International journal of environmental research and public health (2019), Vol. 16, No. 15, pp. 2704	5.4.1 case b) Relevant but supplementary information: The higher incidence of thyroid disease in women (more numerous in organic farming), no data on the menopausal status of the women (change in thyroid hormones), the collection of data within dairies of the farmers may be incomplete, the exposure of farmers to pesticides prior to the study and prior to starting organic farming, and the results for glyphosate should have been examined for confounding from other pesticides that were correlated with glyphosate use. Moreover, the use rate and bioavailability (Acquavella et al. (2004) Environmental Health Perspectives Vol. 112(3), 321-326; Acquavella et al. (2006) Epidemiology, Vol. 17(1), 69-74) of glyphosate was lower than that of the other pesticides used. Since the determination of serum thyroid hormone levels is key in this study, the methods of analysis should have been better documented. This publication is considered unreliable.
413	CA 5.9.4	LaVerda N. L. et al.	2015	Pesticide Exposures and Body Mass Index (BMI) of Pesticide Applicators From the Agricultural Health Study	Journal of Toxicology and Environmental Health, Part A: Current Issues (2015), Vol. 78, No. 20, pp. 1255	5.4.1 case b) Relevant but supplementary information: No relevant endpoint for risk assessment.
416	CA 5.9.4	Lebov J. F. et al.	2015	Pesticide exposure and end-stage renal disease risk among wives of pesticide applicators in the Agricultural Health Study	Environmental Research (2015), Vol. 143, No. Part_A, pp. 198	5.4.1 case b) Relevant but supplementary information: Glyphosate was not associated with ESRD, but this study did not have the detail necessary to provide reliable information. Mostly speculative information about exposure to glyphosate and other pesticides. This publication is considered unreliable.
426	CA 5.9.4	Leon M. E. et al.	2019	Pesticide use and risk of non-Hodgkin lymphoid malignancies in agricultural cohorts from France, Norway and the USA: a pooled analysis from the AGRICOH consortium.	International journal of epidemiology (2019), Vol. 1, No. 48, pp. 1519	5.4.1 case b) Relevant but supplementary information: Due to an error prone exposure methodology and the attendant inability to control confounding. We also note that the results for the Norwegian cohort conflict with the AHS results where exposure is determined more specifically and where there is no relationship between glyphosate and DLBCL among individuals in the highest exposed quartile (≥ 108 days). This publication is considered unreliable.
434	CA 5.9.4	Ling C. et al.	2018	Prenatal Exposure to Ambient Pesticides and Preterm Birth and Term Low Birthweight in Agricultural Regions of California.	Toxics (2018), Vol. 6, No. 3, pp. E41	5.4.1 case b) Relevant but supplementary information: Unproven assumption that residence near land treated with pesticides equates to meaningful exposure. Glyphosate biomonitoring would suggest that is highly implausible. Also, residence on birth certificates is an uncertain indicator of residential proximity to treated land during pregnancy. This publication is considered unreliable.
464	CA 5.9.4	Mink P. J. et al.	2011	Epidemiologic studies of glyphosate and non-cancer health outcomes: a review.	Regulatory toxicology and pharmacology (2011), Vol. 61, No. 2, pp. 172	5.4.1 case b) Relevant but supplementary information: This is an epidemiology review article on non-cancer endpoints.
465	CA 5.9.4	Mink P. J. et al.	2012	Epidemiologic studies of glyphosate and cancer: a review.	Regulatory toxicology and pharmacology (2012), Vol. 63, No. 3, pp. 440	5.4.1 case b) Relevant but supplementary information: review, secondary source.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
466	CA 5.9.4	Mise M.	2011	Epidemiological study of glyphosate herbicide poisoning.	The Japanese journal of toxicology (2011), Vol. 24, No. 1, pp. 69	5.4.1 case b) Relevant but supplementary information: Epidemiological analysis of acute poisoning cases due to oral ingestion of glyphosate (suicide attempts), clinical symptoms such as metabolic acidosis, hyperkalemia, electrocardiogram abnormalities are known effects and should not impact the re-registration.
507	CA 5.9.4	Parks C. G. et al.	2016	Rheumatoid Arthritis in Agricultural Health Study Spouses: Associations with Pesticides and Other Farm Exposures.	Environmental health perspectives (2016), Vol. 124, No. 11, pp. 1728	5.4.1 case b) Relevant but supplementary information: Lack of information about glyphosate frequency of use and timing of use. This publication is considered unreliable.
508	CA 5.9.4	Parvez S. et al.	2018	Glyphosate exposure in pregnancy and shortened gestational length: a prospective Indiana birth cohort study	Environmental Health (2018), Vol. 17, pp. 23/1	5.4.1 case b) Relevant but supplementary information: Small study. Uncertain exposure characterization. Premature births were 1 of 5 for those with glyphosate < LOD and 1 of 66 for those with glyphosate > LOD. This suggests no evidence of glyphosate being related to preterm birth. This publication is considered unreliable.
512	CA 5.9.4	Perry M. J. et al.	2019	Historical evidence of glyphosate exposure from a US agricultural cohort	Environmental Health (2019), Vol. 18, No. 1, pp. 42	5.4.1 case b) Relevant but supplementary information: The study population, the sampling and the method of analysis along with its validation are not sufficiently documented. This publication is considered unreliable.
557	CA 5.9.4	Santos R. et al.	2019	Thyroid and reproductive hormones in relation to pesticide use in an agricultural population in Southern Brazil	Environmental Research (2019), Vol. 173, pp. 221	5.4.1 case b) Relevant but supplementary information: Insufficient information is provided on the biochemical methods used. No detailed description of the analytical methods for the measurement of hormones in serum (using a kit from Roche). This publication is considered unreliable.
569	CA 5.9.4	Shrestha S. et al.	2018	Pesticide use and incident hypothyroidism in pesticide applicators in the agricultural health study	Environmental Health Perspectives (2018), Vol. 126, No. 9, pp. 11	5.4.1 case b) Relevant but supplementary information: Self-reported outcomes, lack of biological predicate for many pesticides (including glyphosate), and failure to control for confounding by other pesticides for glyphosate and for other pesticides. This publication is considered unreliable.
576	CA 5.9.4	Slager R. E. et al.	2010	Rhinitis associated with pesticide use among private pesticide applicators in the agricultural health study	Journal of Toxicology and Environmental Health - Part A: Current Issues (2010), Vol. 73, No. 20, pp. 1382	5.4.1 case b) Relevant but supplementary information: No information on the formulations, farming practice in the given time period has been provided.
578	CA 5.9.4	Snpokou E. et al.	2019	Environmental exposures in young adults with declining kidney function in a population at risk of Mesoamerican nephropathy.	Occupational and environmental medicine (2019), Vol. 76, No. 12, pp. 920	5.4.1 case b) Relevant but supplementary information: Too little glyphosate exposure for an informative study. Many confounding exposures. Although this was described as a case control study, the authors did not calculate odds ratios. Evaluation of mean values is not a causal parameter in a case control study. This publication is considered unreliable.
629	CA 5.9.4	Wang G. et al.	2011	Parkinsonism after chronic occupational exposure to glyphosate.	Parkinsonism & related disorders (2011), Vol. 17, No. 6, pp. 486	5.4.1 case b) Relevant but supplementary information: Reversible Parkinsonism in case of acute intoxication is a well-known effect and not specific for glyphosate. No clear causal connection of chronic Parkinsonism to glyphosate from the presented results.

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
637	CA 5.9.4	Williams G. M. et al.	2016	A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment.	Critical reviews in toxicology (2016), Vol. 46, No. sup 1, pp. 3	5.4.1 case b) Relevant but supplementary information: review, secondary source.
655	CA 5.9.4	Zhang C. et al.	2016	Health effect of agricultural pesticide use in China: implications for the development of GM crops	Scientific reports (2016) Vol. 6, pp. 34918	5.4.1 case b) Relevant but supplementary information: Results are likely to be valid for glyphosate under the exposure circumstances of the study, however the study was not appropriately designed for assessment of chronic health effects. In particular, there were short follow-ups and limited exposure histories.
656	CA 5.9.4	Zhang C. et al.	2018	A comparison of the effects of agricultural pesticide uses on peripheral nerve conduction in China	Scientific Reports (2018), Vol. 8, No. 1, pp. 1	5.4.1 case b) Relevant but supplementary information: Results agree with biological properties of the various pesticides. However, an inappropriate design to study the potentially chronic association between nerve conduction and pesticide exposure. There was short follow-up and limited exposure histories.
659	CA 5.9.4	Zhang F. et al.	2017	Study of the effect of occupational exposure to glyphosate on hepatorenal function.	Chinese journal of preventive medicine (2017), Vol. 51, No. 7, pp. 615	5.4.1 case b) Relevant but supplementary information: Poorly described study design, methods, and analysis. This publication is considered unreliable.
661	CA 5.9.4	Zhang L. et al.	2019	Exposure to glyphosate-based herbicides and risk for non-Hodgkin lymphoma: A meta-analysis and supporting evidence	Mutation Research, Reviews in Mutation Research (2019), Vol. 781, pp. 186	5.4.1 case b) Relevant but supplementary information: Meta-analyses cannot overcome the limitations of the studies included. This publication is considered unreliable.
185	CA 5.9.5	Adams R. D. et al.	2013	The NPIS Pesticide Surveillance Project - Eye contact with pesticides: Circumstances of exposure and toxicity.	Clinical Toxicology (2013), Vol. 51, No. 4, pp. 353	5.4.1 case b) Relevant but supplementary information: This is a report describing ocular exposures to pesticides. Formulated glyphosate is expected to cause moderate conjunctivitis & irritation when the eye is exposed due to the surfactant. This should not impact re-registration.
231	CA 5.9.5	Bosak A. B. et al.	2014	Clinical presentations with different glyphosate-containing herbicides.	Journal of Medical Toxicology (2014), Vol. 10, No. 1, pp. 72	5.4.1 case b) Relevant but supplementary information: This is a report about multi-organ failure after suicidal ingestion of formulated glyphosate and should not impact re-registration.
237	CA 5.9.5	Brunetti R. et al.	2019	Electrocardiographic abnormalities associated with acute glyphosate toxicity.	HeartRhythm Case Rep. (2020), Vol. 6, pp. 63	5.4.1 case b) Relevant but supplementary information: This article claims that dermal exposure to a small amount of glyphosate led to cardiac arrhythmia and claims that the patient developed a Brugada syndrome & long QT syndrome after exposure. The measured QTC in a wide-complex tracing is uninterpretable. Brugada syndrome is largely due to sodium channel block in cardiac myocytes, LQT syndrome is largely due to potassium channel block in the cardiac myocytes. Glyphosate does neither. Moreover, glyphosate is not dermally absorbed and multiple GLP studies have shown that glyphosate is not cardiotoxic.
244	CA 5.9.5	Caganova B. et al.	2017	Caustic effects of chemicals: risk factors for complications and mortality in acute poisoning	Monatsshefte fuer Chemie (2017), Vol. 148, No. 3, pp. 497	5.4.1 case b) Relevant but supplementary information: This article discusses caustic injury in suicide attempts and therefore should not impact registration decisions.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
245	CA 5.9.5	Caganova B. et al.	2017	Caustic ingestion in the elderly: influence of age on clinical outcome	Molecules (2017), Vol. 22, No. 10, pp. 1726/1	5.4.1 case b) Relevant but supplementary information: This article compares outcomes of caustic ingestions in young to elderly patients and it demonstrates that there is a higher mortality in the older group. Glyphosate is mentioned in a table where there were 9 ingestions with no fatalities in the younger group and 2 fatalities in the elderly. This article discusses suicidal ingestions of caustic substances and should therefore not impact re-registration.
254	CA 5.9.5	Carroll R. et al.	2012	Diurnal variation in probability of death following self-poisoning in Sri Lanka--evidence for chronotoxicity in humans.	International journal of epidemiology (2012), Vol. 41, No. 6, pp. 1821	5.4.1 case b) Relevant but supplementary information: This article discusses the concept of chronotoxicity in overdoses. They found no evidence of circadian effects on glyphosate overdoses. This article discusses suicidal ingestions and therefore should not impact registration decisions.
261	CA 5.9.5	Chan C-W. et al.	2016	Successful Extracorporeal Life Support in a Case of Severe Glyphosate-Surfactant Intoxication.	Critical care medicine (2016), Vol. 44, No. 1, pp. E45	5.4.1 case b) Relevant but supplementary information: This paper looked at the use of ECMO in a critically ill patient after formulated glyphosate product overdose. ECMO is sometime of utility in treating overdose patients. This paper should not impact re-registration.
265	CA 5.9.5	Chen H-H. et al.	2013	Spectrum of corrosive esophageal injury after intentional paraquat or glyphosate-surfactant herbicide ingestion.	International journal of general medicine (2013), Vol. 6, pp. 677	5.4.1 case b) Relevant but supplementary information: Ingestions of formulated glyphosate and paraquat are known to cause caustic injury which can result in respiratory and other complications. This paper should not impact the re-registration.
267	CA 5.9.5	Cho Y. et al.	2019	Serial measurement of glyphosate blood concentration in a glyphosate potassium herbicide-intoxicated patient: A case report.	The American journal of emergency medicine (2019), Vol. 37, pp. 160	5.4.1 case b) Relevant but supplementary information: Measurement of glyphosate blood concentration in an intoxicated patient, no unusual findings for such a case (suicide attempt).
269	CA 5.9.5	Cho Y. S. et al.	2019	Use of qSOFA Score in Predicting the Outcomes of Patients With Glyphosate Surfactant Herbicide Poisoning Immediately Upon Arrival at the Emergency Department.	Shock (Augusta, Ga.) (2019), Vol. 51, No. 4, pp. 447	5.4.1 case b) Relevant but supplementary information: This article describes a scoring system that is widely used in intensive care and used to determine the prognosis of patients with a variety of presenting complaints. It is descriptive and helps physicians decide whether a patient needs early ICU intervention. This article is describing a series of overdoses and should not impact re-registration
270	CA 5.9.5	Choi B. et al.	2013	Plasma lactate level may be an insufficient monitoring tool in critically ill patient: A case of ischemia modified albumin in acute glyphosate poisoning.	Toxicology Letters (2013), Vol. 221, Supp. 1, pp. S66	5.4.1 case b) Relevant but supplementary information: This is a report about measuring IMA rather than lactate as a marker of shock after suicidal ingestion of formulated glyphosate and should not impact re-registration.
289	CA 5.9.5	De Raadt W. M. et al.	2015	Acute eosinophilic pneumonia associated with glyphosate-surfactant exposure.	Sarcoidosis, vasculitis, and diffuse lung diseases : official journal of WASOG (2015), Vol. 32, No. 2, pp. 172	5.4.1 case b) Relevant but supplementary information: This article is a case report of a smoker who developed eosinophilic pneumonia after glyphosate exposure. Glyphosate is not a sensitizer as established by multiple GLP regulatory studies. Nozzle application of formulated glyphosate produces aerosols of between 200-350 microns. In humans, it takes droplets of <100 microns to cause inhalational injury. The claim that formulated glyphosate can cause inhalational injury in a setting where it isn't aspirated is not biologically plausible.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
298	CA 5.9.5	Deo S. P. et al.	2012	Accidental chemical burns of oral mucosa by herbicide.	Journal of the Nepal Medical Association (2012), Vol. 52, No. 185, pp. 40	5.4.1 case b) Relevant but supplementary information: Large ingestions of formulated glyphosate can often result in caustic injury secondary to the surfactant's detergent actions on the mucous membranes of in people who ingest them. That said, they shouldn't cause microstomia, which tends to result from much more corrosive and scarring chemicals. This should not impact re-registration.
326	CA 5.9.5	Garlich F. M. et al.	2014	Hemodialysis clearance of glyphosate following a life-threatening ingestion of glyphosate-surfactant herbicide.	Clinical toxicology (2014), Vol. 52, No. 1, pp. 66	5.4.1 case b) Relevant but supplementary information: This article discusses the successful use of haemodialysis in a patient who was critically ill after a formulated glyphosate overdose.
331	CA 5.9.5	Gil H-W. et al.	2013	Effect of intravenous lipid emulsion in patients with acute glyphosate intoxication.	Clinical toxicology (2013), Vol. 51, No. 8, pp. 767	5.4.1 case b) Relevant but supplementary information: This paper evaluated the use of lipid therapy to treat formulated glyphosate overdoses. The mortality in these overdoses is usually due to the caustic injury to the mucosa membrane from the surfactant moiety of the product. There is some evidence that lipid emulsion can decrease the toxicity of the surfactant. These are suicidal ingestions and should not impact re-registration.
352	CA 5.9.5	Hansen N. B. et al.	2013	Severe toxicity from accidental glyphosate ingestion in a child.	Clinical Toxicology (2013), Vol. 51, No. 4, pp. 354	5.4.1 case b) Relevant but supplementary information: This is a case report of an accidental ingestion of formulated glyphosate resulting in mild corrosive injury to the GI tract in a small child and should not impact re-registration.
359	CA 5.9.5	Hour B. T. et al.	2012	Herbicide roundup intoxication: successful treatment with continuous renal replacement therapy.	The American journal of medicine (2012), Vol. 125, No. 8, pp. 1	5.4.1 case b) Relevant but supplementary information: This article discusses the use of CVVD in formulated glyphosate overdoses and medical management of suicidal ingestions and therefore should not impact registration decisions
360	CA 5.9.5	Indrakshi J. et al.	2017	Toxic Epidermal Necrolysis and Acute Kidney Injury due to Glyphosate Ingestion.	Indian journal of critical care medicine (2017), Vol. 21, No. 3, pp. 167	5.4.1 case b) Relevant but supplementary information: Glyphosate based formulations are not known to cause TEN which is a t-cell mediated type IV hypersensitivity reaction. >1% of glyphosate is absorbed through the skin and large ingestions have caustic effects on the GI tract which can result in multi-organ failure.
363	CA 5.9.5	Iwai K. et al.	2014	Utility of upper gastrointestinal endoscopy for management of patients with roundup poisoning.	Journal of Clinical Toxicology (2014), Vol. 4, No. 6, pp. 1	5.4.1 case b) Relevant but supplementary information: This article discusses the use of endoscopy to treat formulated glyphosate overdose and medical management of suicidal ingestions and therefore should not impact registration decisions.
374	CA 5.9.5	Jovic-Stosic J. et al.	2013	Lipid emulsion in treatment of cardiovascular collapse in acute poisoning.	Clinical Toxicology (2013), Vol. 51, No. 4, pp. 288.	5.4.1 case b) Relevant but supplementary information: This is a case series that included one patient with a formulated glyphosate overdose and treatment with ILE. This describes medical management of overdoses and should not impact re-registration.
375	CA 5.9.5	Jovic-Stosic J. et al.	2016	Intravenous lipid emulsion in treatment of cardiocirculatory disturbances caused by glyphosate-surfactant herbicide poisoning.	Vojnosanitetski pregled (2016), Vol. 73, No. 4, pp. 390	5.4.1 case b) Relevant but supplementary information: Medical case of intentional ingestion. ILE has been proposed as a possible therapy for formulated glyphosate overdoses. As this was a suicide attempt, this should not impact re-registration.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
376	CA 5.9.5	Jovic-Stosic J. et al.	2016	Antidotal use of intravenous lipid emulsion: 5 years' experience in an intensive care unit.	Clinical Toxicology (2016), Vol. 54, No. 4, pp. 476.	5.4.1 case b) Relevant but supplementary information: This is a report about using ILE to treat overdoses with 1 patient who ingested formulated glyphosate. This paper should not impact re-registration.
377	CA 5.9.5	Jyoti W. et al.	2014	Esophageal perforation and death following glyphosate poisoning.	Journal of postgraduate medicine (2014), Vol. 60, No. 3, pp. 346	5.4.1 case b) Relevant but supplementary information: Formulated glyphosate can cause caustic injury to the mucosa membrane after ingestion. The esophagus is especially prone to perforation. Due to the absence of a serosa, the esophagus is notoriously difficult to repair & heal. This is not an unusual feature of caustic injury. As this was a suicide attempt, this should not impact re-registration.
379	CA 5.9.5	Kamijo Y. et al.	2016	A multicenter retrospective survey of poisoning after ingestion of herbicides containing glyphosate potassium salt or other glyphosate salts in Japan.	Clinical toxicology (2016), Vol. 54, No. 2, pp. 147	5.4.1 case b) Relevant but supplementary information: This article discusses the incidence of hyperkalemia and multi-organ failure after formulated glyphosate ingestions. Neither of these findings are surprising in the setting of potassium salt or surfactant ingestions.
380	CA 5.9.5	Kamijo Y. et al.	2012	Glyphosate-surfactant herbicide products containing glyphosate potassium salt can cause fatal hyperkalemia if ingested in massive amounts.	Clinical toxicology (2012), Vol. 50, No. 2, pp. 159	5.4.1 case b) Relevant but supplementary information: This article discusses the fact that certain glyphosate-potassium salt formulations can cause fatal hyperkalemia in overdose. This article discusses a feature of suicidal ingestions and therefore should not impact registration decisions.
383	CA 5.9.5	Kato Y.	2015	Three cases of an extreme hyperkalemia associated with glyphosate potassium herbicide poisoning	The Japanese journal of toxicology (2015), Vol. 28, No. 4, pp. 368	5.4.1 case b) Relevant but supplementary information: This article describes a case series of three patients who presented with extreme hyperkalemia after suicidal ingestion of formulated glyphosate. This is not unexpected in an ingestion involving glyphosate formulated product with potassium salts and should not affect re-registration.
384	CA 5.9.5	Kawagashira Y. et al.	2017	Vasculitic Neuropathy Following Exposure to a Glyphosate-based Herbicide.	Internal medicine (2017), Vol. 56, No. 11, pp. 1431	5.4.1 case b) Relevant but supplementary information: This article discussed the development of painful discoloration of the toes and feet four months after the patient spray applied formulated glyphosate to crops. Interestingly, the patient was taking warfarin therapeutically, which can cause the well-described "purple toe syndrome". There is not a mechanism by which sprayed formulated glyphosate can be absorbed by the skin and directly impact small vasculature or neurons in the feet.
390	CA 5.9.5	Kim E. et al.	2016	Patterns of drugs & poisons in southern area of South Korea in 2014.	Forensic Science International (2016), Vol. 269, pp. 50	5.4.1 case b) Relevant but supplementary information: This is an article describing the chemicals / pharmaceuticals that were used in fatal overdoses that were forensically evaluated at the Busan Institute of National Forensic Services. Out of 606 fatalities, agricultural chemicals were involved in 5 and glyphosate was detected in 2 of the cases.
391	CA 5.9.5	Kim Y. H. et al.	2014	Heart rate-corrected QT interval predicts mortality in glyphosate-surfactant herbicide-poisoned patients.	The American journal of emergency medicine (2014), Vol. 32, No. 3, pp. 203	5.4.1 case b) Relevant but supplementary information: This article discusses the utility of the QTc interval to predict mortality in suicidal ingestions of glyphosate-based formulation. It is not unexpected for critically ill patients to develop a long QTc.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
392	CA 5.9.5	Kim Y. H. et al.	2016	Prognostic Factors in Emergency Department Patients with Glyphosate Surfactant Intoxication: Point-of-Care Lactate Testing.	Basic & clinical pharmacology & toxicology (2016), Vol. 119, No. 6, pp. 604	5.4.1 case b) Relevant but supplementary information: This study evaluated the use of lactate as a predictor of mortality and found a statistically significant association between a serum lactate of 4.7mmol/L and mortality in formulated glyphosate overdoses. This is not surprising as caustic injury due to detergent-like surfactants will cause cell death and thereby increase lactate levels. This article discusses predictors of mortality in suicidal ingestions and therefore should not impact registration decisions.
397	CA 5.9.5	Knezevic V. et al.	2012	Early continuous dialysis in acute glyphosate-surfactant poisoning	Srpski arhiv za celokupno lekarstvo (2012), Vol. 140, No. 9-10, pp. 648	5.4.1 case b) Relevant but supplementary information: Glyphosate based formulations can cause renal injury in overdose, and the K+ formulations may result in hyperkalemia. It is therefore reasonable to start hemodialysis or hemofiltration in critically ill patients with kidney failure or hyperkalemia. As this was a suicide attempt, this should not impact re-registration.
419	CA 5.9.5	Lee B. K. et al.	2012	Continuous renal replacement therapy in a patient with cardiac arrest after glyphosate-surfactant herbicide poisoning.	Hong Kong Journal of Emergency Medicine (2012), Vol. 19, No. 3, pp. 214	5.4.1 case b) Relevant but supplementary information: This is a report about multi-organ failure and the use of CVVHD after suicidal ingestion of formulated glyphosate and should not impact re-registration.
420	CA 5.9.5	Lee D. H. et al.	2017	Severe glyphosate-surfactant intoxication: Successful treatment with continuous renal replacement therapy.	Hong Kong Journal of Emergency Medicine (2017), Vol. 24, No. 1, pp. 40	5.4.1 case b) Relevant but supplementary information: This is a report about multi-organ failure and the use of dialysis after suicidal ingestion of formulated glyphosate and should not impact re-registration.
423	CA 5.9.5	Lee W. J. et al.	2012	Incidence of acute occupational pesticide poisoning among male farmers in South Korea	American Journal of Industrial Medicine (2012), Vol. 55, No. 9, pp. 799	5.4.1 case b) Relevant but supplementary information: This article describes a survey performed to assess the incidence of pesticide poisoning in S. Korea. The researchers interviewed 1958 farmers and asked if they exhibited any of the 21 following symptoms: nausea, vomiting, diarrhoea, sore throat, runny nose, dyspnea, headache, dizziness, hyperactivity, profuse sweating, blurred vision, paresthesia, slurred speech, paralysis, chest pain, syncope, muscle weakness, skin irritation, eye irritation, lacrimation, and fatigue. Based on these answers they categorized the farmers into mild, moderate or severe occupational exposure categories. There were 26 formulated glyphosate exposures 17 mild and 9 moderate, with zero fatalities. Based on this self-reported exposure data, they made the following claim: "acute occupational pesticide poisoning was 24.7 (95% CI 22.1–27.2) per 100 male farmers, which corresponds to 209,512 cases across South Korea in 2010." This report supports the data that occupational exposure to glyphosate based products have a very low toxicity profile.
435	CA 5.9.5	Ling S. L. et al.	2018	Workplace chemical and toxin exposures reported to a Poisons Information Centre: A diverse range causing variable morbidity.	European Journal of Emergency Medicine (2018), Vol. 25, No. 2, pp. 134	5.4.1 case b) Relevant but supplementary information: This article describes the characteristics of toxin/chemical exposures reported to an Australian poison center. Glyphosate is mentioned in 1 table only with no description of effects.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
440	CA 5.9.5	Luo W. et al.	2019	Surgical treatment of pyloric stenosis caused by glyphosate poisoning. A case report.	Medicine (2019), Vol. 98, No. 30, pp. e16590	5.4.1 case b) Relevant but supplementary information: This article describes a case report of gastric ulceration and swelling causing pyloric obstruction in a patient who ingested formulated glyphosate. This is not unexpected as formulations contain surfactants which can cause caustic injury to the GI tract with suicidal ingestions. This should not impact re-registration.
441	CA 5.9.5	Mahendrakar K. et al.	2014	Glyphosate surfactant herbicide poisoning and management.	Indian journal of critical care medicine (2014), Vol. 18, No. 5, pp. 328	5.4.1 case b) Relevant but supplementary information: ILE has been proposed as a possible therapy for formulated glyphosate overdoses.
467	CA 5.9.5	Mohamed F. et al.	2016	Mechanism-specific injury biomarkers predict nephrotoxicity early following glyphosate surfactant herbicide (GPSH) poisoning.	Toxicology letters (2016), Vol. 258, pp. 1	5.4.1 case b) Relevant but supplementary information: This article discusses the use of biomarkers to predict kidney injury in formulated glyphosate overdose and predictors of nephrotoxicity in suicidal ingestions and therefore should not impact registration decisions.
471	CA 5.9.5	Moon J. M. et al.	2016	The characteristics of emergency department presentations related to acute herbicide or insecticide poisoning in South Korea between 2011 and 2014.	Journal of toxicology and environmental health. Part A (2016), Vol. 79, No. 11, pp. 466	5.4.1 case b) Relevant but supplementary information: This study showed a decrease in the case fatality rate of suicidal pesticide ingestions between 2011-2014 in South Korea. This clearly demonstrates that herbicides with a lower acute toxicity profile are associated with lower mortality in suicidal ingestions.
477	CA 5.9.5	Nakae H. et al.	2015	Paralytic ileus induced by glyphosate intoxication successfully treated using Kambo medicine.	Acute medicine & surgery (2015), Vol. 2, No. 3, pp. 214	5.4.1 case b) Relevant but supplementary information: This article describes alternative medicine therapies that were used to treat a Japanese woman with a paralytic ileus after glyphosate ingestion. It is not uncommon for patients in a critical care setting to develop an ileus. These tend to resolve on their own without intervention. I cannot be commented on whether this intervention increases GI motility.
478	CA 5.9.5	Nakayama T. et al.	2019	Renal cortical hypoperfusion caused by glyphosate-surfactant herbicide.	Clinical and experimental nephrology (2019), Vol. 23, No. 6, pp. 865	5.4.1 case b) Relevant but supplementary information: This was a suicidal ingestion of formulated glyphosate that resulted in poor renal perfusion & multiorgan failure. Since this was a suicidal ingestion, the outcome is not unexpected and should not impact the re-registration.
488	CA 5.9.5	Ordonez J. et al.	2013	Non-Ethanol hyperlipasemia in toxicology consultation.	Clinical Toxicology (2013), Vol. 51, No. 7, pp. 703	5.4.1 case b) Relevant but supplementary information: This is a case series looking at the toxic causes of pancreatitis in overdose patients. One of whom had ingested formulated glyphosate. This should not impact re-registration.
491	CA 5.9.5	Ozaki T. et al.	2017	Severe Glyphosate-Surfactant Intoxication Successfully Treated With Continuous Hemodiafiltration and Direct Hemoperfusion: Case Report.	Therapeutic apheresis and dialysis (2017), Vol. 21, No. 3, pp. 296	5.4.1 case b) Relevant but supplementary information: This article discusses the use of haemodialysis and haemofiltration in formulated glyphosate overdoses. This article discusses medical management of suicidal ingestions and therefore should not impact registration decisions.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
506	CA 5.9.5	Park S. et al.	2016	Concurrent Hemoperfusion and Hemodialysis in Patients with Acute Pesticide Intoxication.	Blood Purification (2016), Vol. 42, No. 4, pp. 329	5.4.1 case b) Relevant but supplementary information: This article describes the use of hemodialysis and hemoperfusion in pesticide overdoses. Out of 383 pesticide ingestions 110 were glyphosate formulations. Of the 80 deaths reported 12 of them were glyphosate. This article is describing a possibly beneficial modality of treating severe pesticide overdose and should not impact re-registration.
514	CA 5.9.5	Picetti E. et al.	2017	Glyphosate ingestion causing multiple organ failure: A near-fatal case report.	Acta Biomedica (2017), Vol. 88, No. 4, pp. 533	5.4.1 case b) Relevant but supplementary information: This is a report about multi-organ failure after suicidal ingestion of formulated glyphosate and should not impact re-registration.
517	CA 5.9.5	Planche V. et al.	2019	Acute toxic limbic encephalopathy following glyphosate intoxication.	Neurology (2019), Vol. 92, No. 11, pp. 534	5.4.1 case b) Relevant but supplementary information: This article discusses the neurologic sequelae of glyphosate ingestion. Glyphosate cannot cross the blood brain barrier. It is not neurotoxic.
545	CA 5.9.5	Rother H.	2012	Improving poisoning diagnosis and surveillance of street pesticides	SAMJ (2012), Vol. 102, No. 6, Special Iss., pp. 485	5.4.1 case b) Relevant but supplementary information: No new information included.
586	CA 5.9.5	Sribanditmongkol P. et al.	2012	Pathological and toxicological findings in glyphosate-surfactant herbicide fatality: a case report.	The American journal of forensic medicine and pathology (2012), Vol. 33, No. 3, pp. 234	5.4.1 case b) Relevant but supplementary information: Description of a case of poisoning / suicidal ingestions of formulated glyphosate cause caustic injury, it is not unusual to find ulceration and haemorrhage of the GI tract in lethal ingestions.
597	CA 5.9.5	Takeuchi I. et al.	2019	Decrease in Butyrylcholinesterase Accompanied by Intermediate-like Syndrome after Massive Ingestion of a Glyphosate-surfactant.	Internal medicine (2019), Vol. 15; No. 58, pp. 3057	5.4.1 case b) Relevant but supplementary information: Description of a poisoning case related to a surfactant, symptoms are not unusual.
604	CA 5.9.5	Thakur D. S. et al.	2014	Glyphosate poisoning with acute pulmonary edema.	Toxicology international (2014), Vol. 21, No. 3, pp. 328	5.4.1 case b) Relevant but supplementary information: This is a case report of the clinical manifestations of glyphosate-based herbicide ingestions and discusses predictors of mortality in suicidal ingestions and therefore should not impact registration decisions.
619	CA 5.9.5	Varnai V. M. et al.	2013	Report of the poison control centre for the period 1 January - 31 December 2012. Original title: Izvješće centra za kontrolu otrovanja za razdoblje od 1. Siječnja do 31. Prosinca 2012.	Arhiv za Higijenu Rada i Toksikologiju (2013), Vol. 64, No. 1, pp. 183	5.4.1 case b) Relevant but supplementary information: This is a report from the Croatian Poison Center documenting types of exposure reported in 2012. Of the 134 calls regarding pesticide exposure, 84 demonstrated "effects" with 9 described as "serious". Glyphosate was listed as one of the pesticides demonstrating a serious effect. There were no other details provided and there were no fatalities as a result of pesticide exposure.
621	CA 5.9.5	Veale D. J. H. et al.	2013	Toxicovigilance I: a survey of acute poisonings in South Africa based on tygerberg poison information centre data	SAMJ (2013), Vol. 103, No. 5, pp. 293	5.4.1 case b) Relevant but supplementary information: This article summarises the chemicals used in South Africa for suicide. Glyphosate is only mentioned in a table in the article as being involved in 23 cases over a 1 year period accounting for 0.9% of the overall cases reported.
625	CA 5.9.5	Vidyadhara et al.	2014	Atypical presentation of glyphosate poisoning.	Indian Journal of Critical Care Medicine (2014), Vol. 18, Suppl. 1, pp. S36.	5.4.1 case b) Relevant but supplementary information: This is a report about multiorgan failure after suicidal ingestion of formulated glyphosate and should not impact re-registration.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
628	CA 5.9.5	Wang D. et al.	2019	Successful extracorporeal membrane oxygenation support for severe acute diquat and glyphosate poisoning: A case report.	Medicine (2019), Vol. 98, No. 6., pp. e14414	5.4.1 case b) Relevant but supplementary information: This article describes using ECMO to manage a patient with multiorgan failure after formulated glyphosate and diquat ingestion. Since this is describing medical management of suicidal overdoses, it should not impact re-registration
640	CA 5.9.5	Wu C. J. et al.	2015	PICCO interpretation for acute glyphosate intoxication with shock: Favors cardiogenic origin.	Clinical Toxicology (2015), Vol. 53, No. 4, pp. 329	5.4.1 case b) Relevant but supplementary information: This is a report regarding multiorgan failure following suicidal ingestion of formulated glyphosate and should not impact re-registration.
641	CA 5.9.5	Wu J-L. et al.	2015	Glyphosate intoxication resulting in ventricular dysrhythmias and cardiogenic shock.	Clinical Toxicology (2015), Vol. 53, No. 4, pp. 329	5.4.1 case b) Relevant but supplementary information: This is a report regarding multiorgan failure and use of ECMO following suicidal ingestion of formulated glyphosate and should not impact re-registration.
642	CA 5.9.5	Wu M-H. et al.	2015	Successful treatment with hemodialysis for acute renal failure after glyphosate poisoning: A case report.	Clinical Toxicology (2015), Vol. 53, No. 4, pp. 330	5.4.1 case b) Relevant but supplementary information: This is a report about renal failure and haemodialysis after suicidal ingestion of formulated glyphosate and should not impact re-registration.
643	CA 5.9.5	Wunnapak K. et al.	2014	Use of a glyphosate-based herbicide-induced nephrotoxicity model to investigate a panel of kidney injury biomarkers.	Toxicology letters (2014), Vol. 225, No. 1, pp. 192	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo (Concentrate Roundup Weedkiller, 360 g/L isopropylamine salt, Australia) at high acute doses of 250 - 2500 mg/kg.
650	CA 5.9.5	You M-J. et al.	2015	Clostridium tertium bacteremia in a patient with glyphosate ingestion.	The American journal of case reports (2015), Vol. 16, pp. 4	5.4.1 case b) Relevant but supplementary information: This article discussed the use of haemodialysis in the management of hyperkalemia and metabolic acidosis after formulated glyphosate overdose. Haemodialysis is often used to manage refractory hyperkalemia and acidosis. This article discusses medical management of suicidal ingestions and therefore should not impact registration decisions.
652	CA 5.9.5	You Y. et al.	2012	Effect of intravenous fat emulsion therapy on glyphosate-surfactant-induced cardiovascular collapse.	The American journal of emergency medicine (2012), Vol. 30, No. 9, pp. 2097.e1	5.4.1 case b) Relevant but supplementary information: This article is discussing the efficacy of intravenous fat emulsion as therapy for formulated glyphosate overdose. This report contributes to the evidence that intravenous fat emulsion may be a useful treatment for glyphosate overdose as it may limit the toxicity associated with large surfactant ingestions. There are no RCTs for this as it is a suicidal overdose situation.
653	CA 5.9.5	Yu G. C. et al.	2017	The clinical analytics of 10 patients with acute glyphosate poisoning	Chinese journal of industrial hygiene and occupational diseases (2017), Vol. 35, No. 5, pp. 382	5.4.1 case b) Relevant but supplementary information: This is a case study describing the clinical course of 10 patients who drank formulated glyphosate. There were no long-term sequelae of ingestion, and all 10 patients survived. These were suicidal ingestions and should not impact re-registration.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
670	CA 5.9.5	Zouaoui K. et al.	2013	Determination of glyphosate and AMPA in blood and urine from humans: about 13 cases of acute intoxication.	Forensic science international (2013), Vol. 226, No. 1-3, pp. E20	5.4.1 case b) Relevant but supplementary information: This report demonstrates a link between higher blood and urine concentrations with formulated glyphosate overdoses and a poorer outcome. This is unsurprising as it reflects that patients drank a larger volume. Larger volumes of formulated product are associated with more toxicity due to the caustic nature of the surfactant, not the amount of active ingredient. All of the laboratory parameters are expected in critically ill patients. As these were suicidal ingestions, this paper should not impact re-registration.
671	CA 5.9.5	Zyoud S. H. et al.	2017	Global research production in glyphosate intoxication from 1978 to 2015: A bibliometric analysis.	Human & experimental toxicology (2017), Vol. 36, No. 10, pp. 997	5.4.1 case b) Relevant but supplementary information: This article analyzes the reports of increase in glyphosate intoxications from the early 1970s-2016. Given the increase in use over the same time period it is not surprising that there has been an increase in reporting. This should not impact re-registration.
260	CA 6.10.1	Cebotari V. et al.	2018	Content of pesticide residues in the flowers of the acacia and linden trees from the Moldavian Codri area.	Scientific Papers, Series D, Animal Science (2018), Vol. 61, No. 2, pp. 235	5.4.1 case b) Relevant but supplementary information: The publication is considered to only provide supplementary information that is not directly relevant to MRL setting and risk assessment. The residue levels found in linden flower would trigger the need for a honey residue study and cannot be used to directly estimate an MRL. The method used to determine the residues of glyphosate in flowers is not described in the publication and no validation data are provided.
418	CA 6.10.1	Ledoux M. L. et al.	2020	Penetration of glyphosate into the food supply and the incidental impact on the honey supply and bees.	Food Control (2020), Vol. 109, pp. 106859	5.4.1 case b) Relevant but supplementary information: This publication is a review and does not provide any original data, but summarizes relevant data on honey.
504	CA 6.10.1	Pareja L. et al.	2019	Evaluation of glyphosate and AMPA in honey by water extraction followed by ion chromatography mass spectrometry. A pilot monitoring study	Analytical methods (2019), Vol. 11, No. 16, pp. 2123	5.4.1 case b) Relevant but supplementary information: This is primarily an analytical method paper, but does include information on analysis of collected samples.
530	CA 6.10.1	Raimets R. et al.	2020	Pesticide residues in beehive matrices are dependent on collection time and matrix type but independent of proportion of foraged oilseed rape and agricultural land in foraging territory	Chemosphere (2020), Vol. 238, pp. 124555	5.4.1 case b) Relevant but supplementary information: The data are over-summarized. Only the percentage of samples with detectable / quantifiable residues, the median and the maximum residues are provided and it is not clear how many samples were analysed. Furthermore, it seems that the same data were already published (with more details) in a previous article (Karise R. et al., 2017). Therefore, the publication is considered to only provide supplementary information that is not directly relevant to MRL setting and risk assessment.
605	CA 6.10.1	Thompson H. M. et al.	2014	Evaluating exposure and potential effects on honeybee brood (Apis mellifera) development using glyphosate as an example.	Integrated environmental assessment and management (2014), Vol. 10, No. 3, pp. 463	5.4.1 case b) Relevant but supplementary information: No MRLs are currently set for presented commodities and these commodities are not considered for dietary risk assessment either. Therefore, the findings do not directly impact the consumer risk assessment.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
616	CA 6.10.1	Umsza-Guez M. A. et al.	2019	Herbicide determination in Brazilian propolis using high pressure liquid chromatography.	International journal of environmental health research (2019) pp. 1 (Ahead of print)	5.4.1 case b) Relevant but supplementary information: Currently no EU MRL is set for propolis and since propolis is not taken into account for dietary risk assessment in the EU. Because of that and due to the reliability of the analytical method is not clearly established the publication is considered supplementary.
610	CA 6.2.1	Tong M. et al.	2017	Uptake, Translocation, Metabolism, and Distribution of Glyphosate in Nontarget Tea Plant (<i>Camellia sinensis</i> L.).	Journal of agricultural and food chemistry (2017), Vol. 65, No. 35, pp. 7638	5.4.1 case b) Relevant but supplementary information: Supplementary information on the uptake and metabolism of glyphosatephosphate applied in nutrient solution totota plants.
638	CA 6.2.1	Wood L. J.	2019	The presence of glyphosate in forest plants with different life strategies one year after application.	Canadian Journal of Forest Research (2019), Vol. 49, No. 6, pp. 586	5.4.1 case b) Relevant but supplementary information: In order to properly interpret the findings of the publication, it would be important to determine the residues in the non-target crops shortly after application. However, this information is only available indirectly from other studies. According to the publication : “Compared with levels detected in forest plants immediately after application by Feng and Thompson (1990), levels detected in this study are very low.” This means that the residues shortly after application were extremely high, far above the levels that may occur in non-target plants in Europe due to contamination by spray-drift. For this reason and after full text review, the publication is considered to be of limited relevance to the EU renewal dossier. It only provides supplementary information.
599	CA 6.4.2	Tongo I. et al.	2015	Human health risks associated with residual pesticide levels in edible tissues of slaughtered cattle in Benin City, Southern Nigeria.	Toxicology Reports (2015), Vol. 2, pp. 1117	5.4.1 case b) Relevant but supplementary information: Provides information on the relative residue levels in various edible cattle tissues but since the exposure of the cattle is not known no transfer factors can be derived.
266	CA 6.5.3	Chiarello M. et al.	2019	Fast analysis of glufosinate, glyphosate and its main metabolite, aminomethylphosphonic acid, in edible oils, by liquid chromatography coupled with electrospray tandem mass spectrometry.	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment (2019), Vol. 36, No. 9, pp. 1376	5.4.1 case b) Relevant but supplementary information: Residue analytical method. Olive oil is relevant to the uses considered for renewal in the EU. But only few real samples analysed and all showed residues < LOQ which can be predicted from the physical-chemical properties of glyphosate and AMPA.
311	CA 6.9	Ehling S. et al.	2015	Analysis of Glyphosate and Aminomethylphosphonic Acid in Nutritional Ingredients and Milk by Derivatization with Fluorenylmethyloxycarbonyl Chloride and Liquid Chromatography-Mass Spectrometry.	Journal of agricultural and food chemistry (2015), Vol. 63, No. 48, pp. 10562	5.4.1 case b) Relevant but supplementary information: Selected analysis of samples that provide confirmatory results.
366	CA 6.9	Jansons M. et al.	2018	Occurrence of glyphosate in beer from the Latvian market.	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment (2018), Vol. 35, No. 9, pp. 1767	5.4.1 case b) Relevant but supplementary information: Includes information on residues in beer. Not directly relevant to dietary risk assessment but provides supplemental information.

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
411	CA 6.9	Larsson M. O. et al.	2017	Quantifying dietary exposure to pesticide residues using spraying journal data	Food and Chemical Toxicology (2017), Vol. 105, pp. 407	5.4.1 case b) Relevant but supplementary information: Estimate of glyphosate exposure based on spray data in DK. Supplemental to risk assessment.
412	CA 6.9	Larsson M. O. et al.	2018	Refined assessment and perspectives on the cumulative risk resulting from the dietary exposure to pesticide residues in the Danish population	Food and Chemical Toxicology (2018), Vol. 111, pp. 207	5.4.1 case b) Relevant but supplementary information: Refined dietary risk assessment for Danish population. Supplementary to DRA included in submission.
431	CA 6.9	Liao Y. et al.	2018	Validation and application of analytical method for glyphosate and glufosinate in foods by liquid chromatography-tandem mass spectrometry.	Journal of chromatography. A (2018), Vol. 1549, pp. 31	5.4.1 case b) Relevant but supplementary information: This is primarily an analytical method paper, but does include EU monitoring results on 136 food samples (only 2 residues detected).
450	CA 6.9	McQueen H. et al.	2012	Estimating maternal and prenatal exposure to glyphosate in the community setting.	International journal of hygiene and environmental health (2012), Vol. 215, No. 6, pp. 570	5.4.1 case b) Relevant but supplementary information: Study estimated dietary exposure of pregnant women to glyphosate by survey and food analysis. Exposure is well within the National Estimated Daily Intake.
522	CA 6.9	Poulsen M. E. et al.	2017	Results from the Danish monitoring programme for pesticide residues from the period 2004-2011	Food Control (2017), Vol. 74, pp. 25	5.4.1 case b) Relevant but supplementary information: Summary of EU monitoring data.
575	CA 6.9	Skretting L. G. et al.	2015	Pesticide residues in food of plant origin from Southeast Asia - A Nordic project	Food Control (2015), Vol. 51, pp. 225	5.4.1 case b) Relevant but supplementary information: Monitoring data that may be relevant to the actual exposure of EU consumers to glyphosate residues. But non EU data, therefore, not directly linked to the representative uses.
591	CA 6.9	Stephenson C. L. et al.	2016	An assessment of dietary exposure to glyphosate using refined deterministic and probabilistic methods.	Food and chemical toxicology (2016), Vol. 95, pp. 28	5.4.1 case b) Relevant but supplementary information: Refined dietary risk assessment.
405	CA 7.1.1, CA 7.1.2	la Cecilia D. et al.	2018	Analysis of glyphosate degradation in a soil microcosm	Environmental pollution (2018), Vol. 233, pp. 201	5.4.1 case b) Relevant but supplementary information: Factors affecting chemical and microbial degradation of glyphosate.
427	CA 7.1.1, CA 7.1.2	Li H. et al.	2016	Degradation and Isotope Source Tracking of Glyphosate and Aminomethylphosphonic Acid.	Journal of agricultural and food chemistry (2016), Vol. 64, No. 3, pp. 529	5.4.1 case b) Relevant but supplementary information: Provides information on the molecular mechanism of glyphosate degradation.
406	CA 7.1.1.1	la Cecilia D. et al.	2018	Glyphosate dispersion, degradation, and aquifer contamination in vineyards and wheat fields in the Po Valley, Italy.	Water research (2018), Vol. 146, pp. 37	No information relevant for route of degradation. 5.4.1 case b) Relevant but supplementary information: Numeric model used to predict glyphosate degradation in soil layers and concentrations of glyphosate and AMPA in shallow aquifer from use of glyphosate in vineyards and wheat fields in Po Valley, Italy. See Conclusions for results of interest. Since model, not directly relevant to risk assessment, supplementary only.
475	CA 7.1.1.1, CA 7.1.2.1.1	Muskus A. M. et al.	2019	Effect of temperature, pH and total organic carbon variations on microbial turnover of (13)C3(15)N-glyphosate in agricultural soil.	The Science of the total environment (2019), Vol. 658, pp. 697	5.4.1 case b) Relevant but supplementary information: Study of effect of temperature, soil pH, total organic carbon on degradation of 13C and 15N glyphosate to nonextractable residues. Study conducted in Germany. Provides supplemental information as non-extractable residues are not directly considered in the risk assessment.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
190	CA 7.1.2.1.1	Alexa E. et al.	2010	Research on the weed control degree and glyphosate soil biodegradation in apple plantations (Pioneer variety).	Analele Universitatii din Oradea, Fascicula Biologie (2010), Vol. 17, No. 1, pp. 5	5.4.1 case b) Relevant but supplementary information: Only glyphosate mineralization analyzed (measurement of $^{14}\text{CO}_2$), no details on soil characteristics or experimental set-up reported.
482	CA 7.1.2.1.1	Nguyen N. K. et al.	2018	Large variation in glyphosate mineralization in 21 different agricultural soils explained by soil properties.	The Science of the total environment (2018), Vol. 627, pp. 544	5.4.1 case b) Relevant but supplementary information: Study of 21 European soils to determine factors influencing glyphosate mineralization. Exchangeable acidity identified as only univariate factor with negative correlation. NaOH extractable residues have strong negative correlation with glyphosate mineralization. Doesn't fit risk assessment directly but provides useful information.
550	CA 7.1.2.1.1	Saglikler H. A.	2018	Carbon mineralisation in orange grove soils treated with different doses of glyphosate-amine salt	Journal of Environmental Protection and Ecology (2018), Vol. 19, No. 3, pp. 1102	5.4.1 case b) Relevant but supplementary information: Study demonstrates that glyphosate application at up to 4x recommended rates does not decrease carbon mineralisation in soil and in some cases increases carbon mineralisation. Data is supplementary of previously reported work.
613	CA 7.1.2.1.1	Tush D. et al.	2018	Dissipation of polyoxyethylene tallow amine (POEA) and glyphosate in an agricultural field and their co-occurrence on streambed sediments.	The Science of the total environment (2018), Vol. 636, pp. 212	5.4.1 case b) Relevant but supplementary information: Study was conducted in the US but provides data on POEA, glyphosate, and AMPA adsorption and dissipation in top 45 cm of soil and in stream bed sediments. Conclusions useful in qualitative rather than quantitative way.
225	CA 7.1.2.1.1, CA 7.1.2.1.4	Bento C. P. M. et al.	2016	Persistence of glyphosate and aminomethylphosphonic acid in loess soil under different combinations of temperature, soil moisture and light/darkness.	The Science of the total environment (2016), Vol. 572, pp. 301	5.4.1 case b) Relevant but supplementary information: Supplementary information on the rate of degradation of glyphosate and rate of formation/dissipation of AMPA in loess soil as a function of temperature, soil moisture and light/darkness.
400	CA 7.1.2.1.2	Kuhn R. et al.	2017	Identification of the Complete Photodegradation Pathway of Ethylenediaminetetra(methylenephosphonic acid) in Aqueous Solution	Clean: Soil, Air, Water (2017), Vol. 45, No. 5, pp. 1	5.4.1 case b) Relevant but supplementary information: Paper describes another source of AMPA other than glyphosate - supplemental information.
336	CA 7.1.2.1.2, CA 7.1.3.1.2, CA 7.2.1.3	Grandcoir A. et al.	2017	AminoMethylPhosphonic acid (AMPA) in natural waters: Its sources, behavior and environmental fate.	Water research (2017), Vol. 117, pp. 187	5.4.1 case b) Relevant but supplementary information: Review paper, paper does not report experimental results but it is a comprehensive review on the sources of AMPA in the environment.
532	CA 7.1.2.2.1	Rampazzo N. et al.	2013	Adsorption of glyphosate and aminomethylphosphonic acid in soils.	International Agrophysics (2013), Vol. 27, No. 2, pp. 203	5.4.1 case b) Relevant but supplementary information: The study investigates glyphosate and AMPA adsorption to 3 different soils. Iron-oxides appear to play an important role in adsorption of glyphosate and AMPA in these soils.
487	CA 7.1.3	Ololade I. A. et al.	2014	Sorption of Glyphosate on Soil Components: The Roles of Metal Oxides and Organic Materials	Soil & sediment contamination (2014), Vol. 23, No. 5, pp. 571	5.4.1 case b) Relevant but supplementary information: No new data presented, therefore supplementary. This publication is also considered unreliable.
188	CA 7.1.3.1.1	Ahmed A. A. et al.	2018	Unravelling the nature of glyphosate binding to goethite surfaces by ab initio molecular dynamics simulations.	Physical chemistry chemical physics (2018), Vol. 20, No. 3, pp. 1531	5.4.1 case b) Relevant but supplementary information: Explores possible binding mechanisms for glyphosate with three goethite surface planes (010, 001, and 100) in the presence of water. Supplementary and not directly relevant to EU risk assessment.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
204	CA 7.1.3.1.1	Arroyave J. M. et al.	2016	Effect of humic acid on the adsorption/desorption behavior of glyphosate on goethite. Isotherms and kinetics.	Chemosphere (2016), Vol. 145, pp. 34	5.4.1 case b) Relevant but supplementary information: Study of effects of humic acid (HA) on the adsorption/desorption of glyphosate (glyphosate) on goethite. Not related to efate guideline, but supplemental information on glyphosate sorption.
287	CA 7.1.3.1.1	De Geronimo E. et al.	2018	Glyphosate sorption to soils of Argentina. Estimation of affinity coefficient by pedotransfer function	Geoderma (2018), Vol. 322, pp. 140	5.4.1 case b) Relevant but supplementary information: Reports most important parameters for glyphosate adsorption. Provides equation to predict Freundlich constant Kf. Useful qualitative information but not directly relevant for risk assessment.
303	CA 7.1.3.1.1	Dollinger J. et al.	2016	Variability of glyphosate and diuron sorption capacities of ditch beds determined using new indicator-based methods.	The Science of the total environment (2016), Vol. 573, pp. 716	5.4.1 case b) Relevant but supplementary information: Supplementary information of glyphosate sorption. Sorption properties of glyphosate to the ditch-bed materials
304	CA 7.1.3.1.1	Dollinger J. et al.	2017	Using fluorescent dyes as proxies to study herbicide removal by sorption in buffer zones.	Environmental science and pollution research international (2017), Vol. 24, No. 12, pp. 11752	5.4.1 case b) Relevant but supplementary information: Soil adsorption data for glyphosate are reported but they are well within the numbers reported in the dossier. Adsorption compared to that of sulforhodamine B fluorescent dye.
329	CA 7.1.3.1.1	Geng C. et al.	2015	Modeling the release of organic contaminants during compost decomposition in soil.	Chemosphere (2015), Vol. 119, pp. 423	5.4.1 case b) Relevant but supplementary information: The paper is about degradation and adsorption of glyphosate on compost and soils and the data is consistent with endpoints reported in the dossier it does not change the risk assessment.
330	CA 7.1.3.1.1	Ghafoor A. et al.	2013	Modelling pesticide sorption in the surface and subsurface soils of an agricultural catchment.	Pest management science (2013), Vol. 69, No. 8, pp. 919	5.4.1 case b) Relevant but supplementary information: Sorption of glyphosate was measured in surface and subsurface soils to test an 'extended' partitioning model that also accounts for inorganic sorbents and pH as well as organic sorbents.
340	CA 7.1.3.1.1	Gros P. et al.	2017	Glyphosate binding in soil as revealed by sorption experiments and quantum-chemical modeling.	The Science of the total environment (2017), Vol. 586, pp. 527	5.4.1 case b) Relevant but supplementary information: A multitude of binding mechanisms to clay minerals and organic colloids studied make the occurrence of free glyphosate rather unlikely but a leaching of glyphosate complexes via preferential flow path through soil and transfer to waterways rather likely.
492	CA 7.1.3.1.1	Ozbay B. et al.	2018	Sorption and desorption behaviours of 2,4-D and glyphosate in calcareous soil from Antalya, Turkey	Water and environment journal (2018), Vol. 32, No. 1, pp. 141	5.4.1 case b) Relevant but supplementary information: Test soil was selected to be representative for the region of Antalya, Turkey. The use of oven-dried soil is considered not appropriate for the risk assessment.
493	CA 7.1.3.1.1	Padilla J. T. et al.	2019	Interactions among Glyphosate and Phosphate in Soils: Laboratory Retention and Transport Studies.	Journal of environmental quality (2019), Vol. 48, No. 1, pp. 156	5.4.1 case b) Relevant but supplementary information: Study conducted with U.S. soils but shows that Kf values of glyphosate are lower in the presence of phosphate. Addition of phosphate also impacts glyphosate movement in soil columns. Kf values are in range of previously reported.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
499	CA 7.1.3.1.1	Pandey P. et al.	2019	Assessing Glyphosate and Fluridone Concentrations in Water Column and Sediment Leachate.	Frontiers in Environmental Science (2019), Vol. 7, pp. Article No.: 22	5.4.1 case b) Relevant but supplementary information: This U.S. study was aimed to improve the existing understanding of the deposition of herbicides from water column to bed sediment and leachate of herbicides from bed sediment to water column. The study was prompted by herbicide treatment of water for aquatic weeds. Results may provide useful information although not directly relevant for EU risk assessment.
503	CA 7.1.3.1.1	Paradelo M. et al.	2015	Prediction of the glyphosate sorption coefficient across two loamy agricultural fields	Geoderma (2015), Vol. 259-260, pp. 224	5.4.1 case b) Relevant but supplementary information: Study of 9 soil factors influencing glyphosate sorption in 2 different fields. Not related to an efate guideline, but supplementary information.
573	CA 7.1.3.1.1	Singh B. et al.	2014	Soil characteristics and herbicide sorption coefficients in 140 soil profiles of two irregular undulating to hummocky terrains of western Canada	Geoderma (2014), Vol. 232-234, pp. 107	5.4.1 case b) Relevant but supplementary information: Soil adsorption data for glyphosate are reported but they are well within the numbers reported in the dossier.
627	CA 7.1.3.1.1	Waiman C. V. et al.	2016	The simultaneous presence of glyphosate and phosphate at the goethite surface as seen by XPS, ATR-FTIR and competitive adsorption isotherms	Colloids and Surfaces A: Physicochemical and Engineering Aspects (2016), Vol. 498, pp. 121	5.4.1 case b) Relevant but supplementary information: The study does not investigate soil adsorption but mineral. The study does not include an endpoint relevant for the risk assessment.
630	CA 7.1.3.1.1	Wang M. et al.	2019	Montmorillonites Can Tightly Bind Glyphosate and Paraquat Reducing Toxin Exposures and Toxicity	ACS omega (2019), Vol. 4, No. 18, pp. 17702	5.4.1 case b) Relevant but supplementary information: Article provides binding properties of glyphosate to calcium and sodium montmorillonite clay. Supplementary information as clay is a soil component, not a soil.
648	CA 7.1.3.1.1	Yan W. et al.	2018	Molecular Insights into Glyphosate Adsorption to Goethite Gained from ATR-FTIR, Two-Dimensional Correlation Spectroscopy, and DFT Study.	Environmental science & technology (2018), Vol. 52, No. 4, pp. 1946	5.4.1 case b) Relevant but supplementary information: Study of molecular-level interfacial configurations and reaction mechanisms of glyphosate with iron (hydr)oxides. The influence of phosphate is also described.
667	CA 7.1.3.1.1	Zhao Y. et al.	2015	Use of Fe/Al drinking water treatment residuals as amendments for enhancing the retention capacity of glyphosate in agricultural soils.	Journal of environmental sciences (2015), Vol. 34, pp. 133	5.4.1 case b) Relevant but supplementary information: Use of Fe/Al drinking water treatment residuals (WTRs) as a soil amendment to increase glyphosate sorption and decrease desorption in soils. Supplementary information not directly related to efate guideline studies.
485	CA 7.1.3.1.1, CA 7.1.4.1.1	Okada E. et al.	2016	Adsorption and mobility of glyphosate in different soils under no-till and conventional tillage.	Geoderma (2016), Vol. 263, pp. 78	5.4.1 case b) Relevant but supplementary information: Soil adsorption data for glyphosate are reported but they are well within the numbers provided in the dossier.
447	CA 7.1.3.1.1, CA 7.2.1.3	Maqueda C. et al.	2017	Behaviour of glyphosate in a reservoir and the surrounding agricultural soils.	The Science of the total environment (2017), Vol. 593-594, pp. 787	5.4.1 case b) Relevant but supplementary information: Confirmatory data on sorption and water/sediment behaviour and natural water photolysis of glyphosate.
649	CA 7.1.3.1.1, CA 7.2.1.3	Yang Y. et al.	2018	Comparative study of glyphosate removal on goethite and magnetite: Adsorption and photo-degradation.	Chemical Engineering Journal (2018), Vol. 352, pp. 581	5.4.1 case b) Relevant but supplementary information: Study of photodegradation of glyphosate in environment by goethite and magnetite.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
206	CA 7.1.4	Aslam S. et al.	2018	Mulch of plant residues at the soil surface impact the leaching and persistence of pesticides: A modelling study from soil columns.	Journal of contaminant hydrology (2018), Vol. 214, pp. 54	5.4.1 case b) Relevant but supplementary information: Model developed to predict glyphosate degradation / movement in presence of mulch. Not an EU validated model. Experimental data used to test the model were from a previous paper.
253	CA 7.1.4	Carretta L. et al.	2019	A new rapid procedure for simultaneous determination of glyphosate and AMPA in water at sub µg/L level.	Journal of chromatography. A (2019), Vol. 1600, pp. 65	5.4.1 case b) Relevant but supplementary information: Analytical method. Analyzed runoff samples from the Po River Valley in Italy. Only ranges of values provided not individual values. Indicates glyphosate concentrations are lower in the presence of a buffer strip than without buffer strip.
315	CA 7.1.4	Exterkoetter R. et al.	2019	Potential of terracing to reduce glyphosate and AMPA surface runoff on Latosol	Journal of soils and sediments (2019), Vol. 19, No. 5, pp. 2240	5.4.1 case b) Relevant but supplementary information: Study in Brazil. Demonstrates effectiveness of terrace in reducing total mass loss of glyphosate and AMPA by reducing run-off volume. Did not reduce concentrations of glyphosate in run-off water. Potentially useful information but not directly relevant to EU risk assessment.
541	CA 7.1.4	Richards B. K. et al.	2018	Antecedent and Post-Application Rain Events Trigger Glyphosate Transport from Runoff-Prone Soils	Environmental science & technology letters (2018), Vol. 5, No. 5, pp. 249	5.4.1 case b) Relevant but supplementary information: Run-off study in New York State, USA. The proposed soil hydrologic condition in 7 days pre-spraying is important in determining degree of runoff. Conclusion from study of interest even though data not appropriate for EU risk assessment.
660	CA 7.1.4	Zhang K. et al.	2019	Can we use a simple modelling tool to validate stormwater biofilters for herbicides treatment?	Urban Water Journal (2019), Vol. 16, pp. 412	5.4.1 case b) Relevant but supplementary information: Biofilter validation model. Field validation work performed in Australia. Model may be of interest even though field data not directly relevant to the EU.
593	CA 7.1.4.1	Suleman M. et al.	2019	Laboratory simulation studies of leaching of the priority pesticides and their transformation products in soils	Journal of Animal and Plant Sciences (2019), Vol. 29, No. 4, pp. 1112	5.4.1 case b) Relevant but supplementary information: It does not follow the OECD Column Leaching Guideline (OECD 312). Rather than applying artificial rain continuously for 48 hrs as per guideline, an unspecified amount of artificial rain is applied at the end of the day to achieve 35-40 mL of leachate the following morning.
348	CA 7.1.4.1.1	Hagner M. et al.	2013	The effects of biochar, wood vinegar and plants on glyphosate leaching and degradation	European journal of soil biology (2013), Vol. 58, pp. 1	5.4.1 case b) Relevant but supplementary information: The paper investigated addition of biochar, plants, and wood vinegar to the soil in pots and reported that biochar decreased the leaching of glyphosate, it is only relevant for mechanism of sorption but not for risk assessment.
664	CA 7.1.4.1.1, CA 7.1.4.1.2, CA 7.2.1.1	Zhang W. et al.	2019	A method for determining glyphosate and its metabolite aminomethyl phosphonic acid by gas chromatography-flame photometric detection.	Journal of chromatography. A (2019), Vol. 1589, pp. 116	5.4.1 case b) Relevant but supplementary information: Primarily an analytical methods paper with examples of hydrolysis and column leaching data provided. Insufficient methodology information provided for risk assessment.
395	CA 7.1.4.3, CA 7.5	Kjaer J. et al.	2011	Reply to Comments on "Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils".	Chemosphere (2011), Vol. 85, No. 9, pp. 1539	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Reply to Comments on by Petersen et al. 2011, Chemosphere (2011), Vol. 84, No. 4, pp. 471-479.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
513	CA 7.1.4.3, CA 7.5	Petersen C. T. et al.	2011	Comments on "Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils".	Chemosphere (2011), Vol. 85, No. 9, pp. 1538	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, comment on Kjaer et al. 2011, Chemosphere (2011), Vol. 84, No. 4, pp. 471-479.
205	CA 7.2.1	Ascolani Y. J. et al.	2014	Abiotic degradation of glyphosate into aminomethylphosphonic acid in the presence of metals.	Journal of agricultural and food chemistry (2014), Vol. 62, No. 40, pp. 9651	5.4.1 case b) Relevant but supplementary information: The paper is about abiotic degradation of glyphosate into AMPA in the presence of metals but it does not change the risk assessment.
510	CA 7.2.1	Paudel P. et al.	2015	Bimessite-Catalyzed Degradation of Glyphosate: A Mechanistic Study Aided by Kinetics Batch Studies and NMR Spectroscopy.	Soil Science Society of America Journal (2015), Vol. 79, No. 3, pp. 815	5.4.1 case b) Relevant but supplementary information: No relevant information on environmental fate included but a new abiotic (bimessite) degradation of glyphosate is discussed.
526	CA 7.2.1.1	Qin J. et al.	2017	Potential effects of rainwater-borne H ₂ O ₂ on competitive degradation of herbicides and in the presence of humic acid.	Chemosphere (2017), Vol. 170, pp. 146	5.4.1 case b) Relevant but supplementary information: Provides information on degradation of glyphosate in the presence of hydrogen peroxide, Fe ²⁺ , and humic acid and the presence of another pesticide simulating conditions found in natural waters.
371	CA 7.2.1.3	Jiang Y. et al.	2016	The role of Fe(III) on phosphate released during the photo-decomposition of organic phosphorus in deionized and natural waters.	Chemosphere (2016), Vol. 164, pp. 208	5.4.1 case b) Relevant but supplementary information: Study of the role of Fe ³⁺ in photodegradation of glyphosate in natural water.
236	CA 7.2.2.3	Brook A. L. et al.	2019	Microbial Turnover of Glyphosate to Biomass: Utilization as Nutrient Source and Formation of AMPA and Biogenic NER in an OECD 308 Test.	Environmental science & technology (2019), Vol. 53, No. 10, pp. 5838	5.4.1 case b) Relevant but supplementary information: Uses data from another study (Wang, 2016) to test model to predict glyphosate mineralisation, degradation, and incorporation into non-extractable residues. Not directly relevant to EU risk assessment.
203	CA 7.5	Armbruster D. et al.	2019	Characterization of phosphonate-based antiscalants used in drinking water treatment plants by anion-exchange chromatography coupled to electrospray ionization time-of-flight mass spectrometry and inductively coupled plasma mass spectrometry.	Journal of chromatography A (2019), Vol. 1601, pp. 189	5.4.1 case b) Relevant but supplementary information: Article is primarily about identification of impurities in anti-scaling products used in drinking water treatment. AMPA is identified as being present in some antiscalants at concentrations from 1.9 to 157 mg/L after 10,000 fold dilution of the commercial antiscalants. Information may be used qualitatively but not directly for EU risk assessments.
207	CA 7.5	Aslam S. et al.	2015	Effect of rainfall regimes and mulch decomposition on the dissipation and leaching of S-metolachlor and glyphosate: a soil column experiment.	Pest management science (2015), Vol. 71, No. 2, pp. 278	5.4.1 case b) Relevant but supplementary information: The study describes a soil column leaching tests with glyphosate in French soils. Glyphosate recovery from the soil column at Day 0 was only 52%. This recovery is not acceptable to draw further conclusions from the study. This publication is considered unreliable.
233	CA 7.5	Boye K. et al.	2019	Long-term data from the swedish national environmental monitoring program of pesticides in surface waters	Journal of Environmental Quality (2019), Vol. 48, pp. 1109	5.4.1 case b) Relevant but supplementary information: Describes pesticide analysis data and pesticide use information available for 4 small watersheds in Sweden. Data is available elsewhere but article provides a description of methodology and sources for data.
234	CA 7.5	Braun C. et al.	2013	The load from rail wastewater. Emissions of micropollutants from rail traffic into the watershed	Aqua & Gas (2013), Vol. 93, No. 7/8, pp. 40	5.4.1 case b) Relevant but supplementary information: No new glyphosate water concentrations are presented. Using worst-case measured values, glyphosate concentrations are predicted in various size flowing water bodies.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
251	CA 7.5	Charles L. et al.	2019	Meta-analysis of glyphosate contamination in surface waters and dissipation by biofilms.	Environment international (2019), Vol. 124, pp. 284	5.4.1 case b) Relevant but supplementary information: High phosphorus concentrations in surface water can reduce complete glyphosate degradation by biofilms and favour the accumulation of AMPA in river water.
302	CA 7.5	di Guardo A. et al.	2016	A case study on monitoring glyphosate in water. Monitoraggio delle acque: il caso studio glifosate.	Informatore Agrario (2016), Vol. 72, No. 23, pp. 55	5.4.1 case b) Relevant but supplementary information: No new data presented. Describes a method for evaluating areas around monitoring stations in Lombardi region of Italy where the concentrations of glyphosate exceed the drinking water standard.
381	CA 7.5	Karasali H. et al.	2019	Investigation of the presence of glyphosate and its major metabolite AMPA in Greek soils.	Environmental science and pollution research international (2019), Vol. 26, No. 36, pp. 36308	5.4.1 case b) Relevant but supplementary information: Paper provides data on glyphosate & AMPA concentrations in Greek soils, but there is no correlating information on glyphosate rates applied or any information on soil characterization.
386	CA 7.5	Kepler R. M. et al.	2019	Soil microbial communities in diverse agroecosystems exposed to the herbicide glyphosate.	Applied and environmental microbiology (2020), Vol. 18, No. 86	5.4.1 case b) Relevant but supplementary information: Not relevant to existing endpoint but provide support that glyphosate does not have a negative impact on soil microorganisms.
396	CA 7.5	Klatyik S. et al.	2017	Dissipation of the herbicide active ingredient glyphosate in natural water samples in the presence of biofilms	International journal of environmental analytical chemistry (2017), Vol. 97, No. 10, pp. 901	5.4.1 case b) Relevant but supplementary information: The article reports glyphosate dissipation in irradiated natural water samples from European surface waters under laboratory conditions. The water was only characterised for pH and conductivity. No dark control experiments were conducted. Average results of concentration measurements are only presented as graphical plots and not discussed in detail (focus on effect of biofilms). This publication is considered unreliable.
404	CA 7.5	Kylin H.	2013	Time-integrated sampling of glyphosate in natural waters.	Chemosphere (2013), Vol. 90, No. 6, pp. 1821	5.4.1 case b) Relevant but supplementary information: Provides information on storage stability of surface water samples that can be used to evaluate results from other surface water monitoring studies.
442	CA 7.5	Maillard E. et al.	2012	Removal of dissolved pesticide mixtures by a stormwater wetland receiving runoff from a vineyard catchment: an inter-annual comparison	International journal of environmental analytical chemistry (2012), Vol. 92, No. 8, pp. 979	5.4.1 case b) Relevant but supplementary information: Confirmatory data showing storm water wetlands removed glyphosate/AMPA from agricultural runoff.
443	CA 7.5	Mailler R. et al.	2014	Biofiltration vs conventional activated sludge plants: what about priority and emerging pollutants removal?	Environmental Science and Pollution Research (2014), Vol. 21, No. 8, pp. 5379	5.4.1 case b) Relevant but supplementary information: Paper compares glyphosate removal in waste water treatment by two primary and two biological treatments.
445	CA 7.5	Mandiki S. N. M. et al.	2014	Effect of land use on pollution status and risk of fish endocrine disruption in small farmland ponds	Hydrobiologia (2014), Vol. 723, No. 1, pp. 103	5.4.1 case b) Relevant but supplementary information: Provides glyphosate concentrations in 15 Belgian ponds in different seasons and different land uses. End-points cannot be used directly in the risk assessment for the renewal of glyphosate at EU level. Only summary glyphosate concentrations available.
474	CA 7.5	Munz N. et al.	2012	Pesticide measurements in watercourses	Aqua & Gas (2012), Vol. 92, No. 11, pp. 32	5.4.1 case b) Relevant but supplementary information: Describes evaluation of concentrations of glyphosate and other PPP's and biocides from flowing water bodies of different sizes in Switzerland. Total 545 sites (32 sites for glyphosate). Only data presented is Maximum and Mean concentrations across all sites.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
476	CA 7.5	Mutzner L. et al.	2016	Model-based screening for critical wet-weather discharges related to micropollutants from urban areas.	Water research (2016), Vol. 104, pp. 547	5.4.1 case b) Relevant but supplementary information: Model to predict glyphosate concentration from storm water outlets and combined sewer overflows. Glyphosate does not exceed EQS based on conservative modeling. Not directly relevant for risk assessment but useful information.
527	CA 7.5	Quaglia G. et al.	2019	A spatial approach to identify priority areas for pesticide pollution mitigation	JOURNAL OF ENVIRONMENTAL MANAGEMENT (2019), Vol. 246, pp. 5833	5.4.1 case b) Relevant but supplementary information: This paper describes a modeling approach to assess potential risk of glyphosate loads in waterbodies but does not utilize or report measured glyphosate concentrations. Provides supplemental information but not directly relevant for glyphosate EU risk assessment.
536	CA 7.5	Reding M.-A.	2012	Letter to the editor regarding "Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by on-line solid phase extraction followed by liquid chromatography coupled to tandem mass spectrometry".	Analytical and bioanalytical chemistry (2012), Vol. 404, No. 2, pp. 613	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, comments on Sanchis et al. 2011, Analytical and bioanalytical chemistry (2012), Vol. 402, No. 7, pp. 2335-45.
572	CA 7.5	Silva V. et al.	2019	Pesticide residues in European agricultural soils - A hidden reality unfolded	Science of the total environment (2019), Vol. 653, pp. 1532	5.4.1 case b) Relevant but supplementary information: Analysis for glyphosate & AMPA and other pesticides in 317 soil samples from 11 EU countries. Provides indication of residues but no use history.
574	CA 7.5	Skeff W. et al.	2015	Glyphosate and AMPA in the estuaries of the Baltic Sea method optimization and field study.	Marine pollution bulletin (2015), Vol. 100, No. 1, pp. 577	5.4.1 case b) Relevant but supplementary information: Provides optimized analytical method and surface water monitoring results for 10 estuaries along the Baltic Sea in Germany.
577	CA 7.5	Slomberg D. L. et al.	2017	Insights into natural organic matter and pesticide characterisation and distribution in the Rhone River.	Environmental Chemistry (2017), Vol. 14, No. 1, pp. 64	5.4.1 case b) Relevant but supplementary information: Supplementary information on glyphosate detection in surface water.
588	CA 7.5	Staufer P. et al.	2012	Diffuse inflow from settlements	Aqua & Gas (2012), Vol. 92, No. 11, pp. 42	5.4.1 case b) Relevant but supplementary information: Describes modeling to predict contamination of 4 chemicals (one of which is glyphosate) in rainfall runoff and stormwater overflow discharge from WWTP outflow. Evaluates results at both the local and the Rhein River scale.
595	CA 7.5	Swartjes F. A. et al.	2020	Measures to reduce pesticides leaching into groundwater-based drinking water resources: An appeal to national and local governments, water boards and farmers	The Science of the total environment (2020), Vol. 699, pp. 134186	5.4.1 case b) Relevant but supplementary information: Does not provide new data but summarizes exceedances of >75% of 0.1 ug/L for GW abstractions used for Drinking Water. Also proposes measures to reduce pesticide concentrations in GW.
598	CA 7.5	Tang T. et al.	2017	Hysteresis and parent-metabolite analyses unravel characteristic pesticide transport mechanisms in a mixed land use catchment.	Water Research (2017), Vol. 124, pp. 663	5.4.1 case b) Relevant but supplementary information: Use of adapted hysteresis modeling to improve understanding on pesticide metabolite transport behaviours in catchments with diverse pesticide sources and complex transport mechanisms and provide a basis for effective management strategies. Provides information on other sources of AMPA (besides glyphosate degradation).

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
603	CA 7.5	Tauchnitz N. et al.	2017	Quantification of pesticide input into surface waters in a small catchment area (Querne/Weida). Quantifizierung von Pflanzenschutzmittel(PSM)-Eintraegen in Oberflaechengewasser in einem Kleinzugsgebiet (Querne/Weida).	Lysimeter Forschung-Moeglichkeiten und Grenzen Lysimeter research - options and limits, 9-10 May 2017, Raumberg-Gumpenstein, Austria (2017), pp. 11	5.4.1 case b) Relevant but supplementary information: Provides information on surface water sampling in Germany, but no concentrations of glyphosate reported.
608	CA 7.5	Todorovic G. R. et al.	2010	Dispersion of glyphosate in soils through erosion. Environmental Quality 4	Air, water, and soil pollution (2010), Vol. 4, pp. 15	5.4.1 case b) Relevant but supplementary information: Analysis of runoff samples from small vegetative field plots following glyphosate application and subsequent artificial rain is not expected to provide additional relevant data. Furthermore, no details of analytical methods is reported.
197	CA 8.1.4	Amaral M. J. et al.	2012	The use of a lacertid lizard as a model for reptile ecotoxicology studies - Part 1 Field demographics and morphology	Chemosphere (2012), Vol. 87, No. 7, pp. 757	5.4.1 case b) Relevant but supplementary information: This study reports results from a long term population monitoring study. The endpoints are such that it difficult to relate to an ecotox risk assessment for Annex I renewal purposes, but is supportive from a population level perspective.
212	CA 8.1.4	Babalola O. O. et al.	2018	Comparative Early Life Stage Toxicity of the African Clawed Frog, <i>Xenopus laevis</i> Following Exposure to Selected Herbicide Formulations Applied to Eradicate Alien Plants in South Africa.	Archives of Environmental Contamination and Toxicology (2018), Vol. 75, No. 1, pp. 8	5.4.1 case b) Relevant but supplementary information: As the composition of the Roundup used in the test cannot be confirmed, the study must be considered as being supplementary. Original roundup contains a POEA surfactant which drives the toxicity of the product.
213	CA 8.1.4	Bach N. C. et al.	2016	Effect on the growth and development and induction of abnormalities by a glyphosate commercial formulation and its active ingredient during two developmental stages of the South-American Creole frog, <i>Leptodactylus latrans</i> .	Environmental science and pollution research international (2016), Vol. 23, No. 23, pp. 23959	5.4.1 case b) Relevant but supplementary information: Endpoint data presented for a formulated product other than the representative formulation for the Annex I. There are data indicated for glyphosate technical material, but this material is not identified in the materials and methods.
275	CA 8.1.4	Cothran R. D. et al.	2013	Proximity to agriculture is correlated with pesticide tolerance: evidence for the evolution of amphibian resistance to modern pesticides.	Evolutionary Applications (2013), Vol. 6, No. 5, pp. 832	5.4.1 case b) Relevant but supplementary information: Endpoints or findings are not relevant at EU level ecotox risk assessment, but may be evidence / relevant to biodiversity discussions.
324	CA 8.1.4	Fuentes L. et al.	2014	Role of sediments in modifying the toxicity of two Roundup formulations to six species of larval anurans.	Environmental toxicology and chemistry (2014), Vol. 33, No. 11, pp. 2616	5.4.1 case b) Relevant but supplementary information: No specific endpoints presented that could be used in an EU level Annex I Ecotox risk assessment.
343	CA 8.1.4	Gungordu A.	2013	Comparative toxicity of methidathion and glyphosate on early life stages of three amphibian species: <i>Pelophylax ridibundus</i> , <i>Pseudeidalea viridis</i> , and <i>Xenopus laevis</i> .	Aquatic toxicology (2013), Vol. 140-141, pp. 220	5.4.1 case b) Relevant but supplementary information: Endpoints for amphibians are not a data requirement for Annex I renewal in the EU, as there are no recognised guidelines.
344	CA 8.1.4	Gungordu A. et al.	2016	Integrated assessment of biochemical markers in premamorphic tadpoles of three amphibian species exposed to glyphosate- and methidathion-based pesticides in single and combination forms.	Chemosphere (2016), Vol. 144, pp. 2024	5.4.1 case b) Relevant but supplementary information: Amphibian enzyme level based endpoints are not a data requirement for the EU level ecotox risk assessment for Annex I purposes. Endpoints cannot be directly related to the EU level Ecotox risk assessment.

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425	CA 8.1.4	Lenkowski J. R. et al.	2010	Low concentrations of atrazine, glyphosate, 2,4-dichlorophenoxyacetic acid, and triadimefon exposures have diverse effects on <i>Xenopus laevis</i> organ morphogenesis.	Journal of environmental sciences (2010), Vol. 22, No. 9, pp. 1305	5.4.1 case b) Relevant but supplementary information: Toxicity of glyphosate and other chemistry to amphibians to assess malformations, up to 5 mg/L. Static renewal at 24 hr in 48 hr study. Conducted in the US. No relevant endpoint generated for the glyphosate RA renewal.
525	CA 8.1.4	Puglis H. J. et al.	2011	Effects of Technical-Grade Active Ingredient vs. Commercial Formulation of Seven Pesticides in the Presence or Absence of UV Radiation on Survival of Green Frog Tadpoles	Archives of Environmental Contamination and Toxicology (2011), Vol. 60, No. 1, pp. 145	5.4.1 case b) Relevant but supplementary information: Conducted in the US, compares glyphosate a.i. and glyphosate product (and others). Study looks at toxicity to green frog tadpoles (collected from local pond and kept in aged tap water) and impact of UV radiation to see if it enhances toxicity. Application up to 5 mg/L. Findings difficult to extrapolate to the regulatory risk assessment of glyphosate.
546	CA 8.1.4	Ruamthum W. et al.	2011	Effect of glyphosate-based herbicide on acetylcholinesterase activity in tadpoles, <i>Hoplobatrachus rugulosus</i> .	Communications in agricultural and applied biological sciences (2011), Vol. 76, No. 4, pp. 923	5.4.1 case b) Relevant but supplementary information: Conducted in Thailand. Study to look at effect of glyphosate on enzyme activity in tadpoles (east asian bullfrog). 96 hr exposure. LC50 values generated.
626	CA 8.1.4	Vincent K. et al.	2015	The toxicity of glyphosate alone and glyphosate-surfactant mixtures to western toad (<i>Anaxyrus boreas</i>) tadpoles.	Environmental toxicology and chemistry (2015), Vol. 34, No. 12, pp. 2791	5.4.1 case b) Relevant but supplementary information: Approaches used are not recognised approaches, but do inform on the toxicity of glyphosate IPA salt to amphibians in the glyphosate only investigations.
631	CA 8.1.4	Weir S. M. et al.	2016	Acute toxicity and risk to lizards of rodenticides and herbicides commonly used in New Zealand.	New Zealand Journal of Ecology (2016), Vol. 40, No. 3, pp. 342	5.4.1 case b) Relevant but supplementary information: Species relevance is difficult to relate to an EU level ecotox risk assessment for Annex I.
633	CA 8.1.4	Williams B. K. et al.	2010	Larval responses of three midwestern anurans to chronic, low-dose exposures of four herbicides.	Archives of environmental contamination and toxicology (2010), Vol. 58, No. 3, pp. 819	5.4.1 case b) Relevant but supplementary information: Eggs collected from wetlands.
252	CA 8.1.5	Carrasco A. E.	2011	Reply to the letter to the editor regarding our article (Paganelli et al., 2010).	Chemical research in toxicology (2011), Vol. 24, No. 5, pp. 610	5.4.1 case b) Relevant but supplementary information: Letter to the Editor; Reply to Paganelli et al., 2010, Paganelli et al. Chem. Res. Toxicol (2010), Vol. 23, pp. 1586-1595.
494	CA 8.1.5	Paganelli A. et al.	2010	Glyphosate-based herbicides produce teratogenic effects on vertebrates by impairing retinoic acid signaling.	Chemical research in toxicology (2010), Vol. 23, No. 10, pp. 1586	5.4.1 case b) Relevant but supplementary information: Study to look at the effect of glyphosate product on the developmental effects of <i>xenopus laevis</i> embryos. Glyphosate injected into embryos. No relevant endpoint generated for the regulatory risk assessment of glyphosate renewal. High concentrations, unrealistic route of exposure. Conducted in Argentina.
258	CA 8.2	Cattaneo R. et al.	2011	Toxicological responses of <i>Cyprinus carpio</i> exposed to a commercial formulation containing glyphosate.	Bulletin of environmental contamination and toxicology (2011), Vol. 87, No. 6, pp. 597	5.4.1 case b) Relevant but supplementary information: Roundup (480 g/L contains surfactant) used up to 10 mg/L with common carp to look at impact on AChE enzyme and physiological effects. Study described well but not conducted to a guideline and the endpoints can not be extrapolated for use in the renewal of glyphosate. Conducted outside EU.

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319	CA 8.2	Filizadeh Y. et al.	2011	Toxicity determination of three sturgeon species exposed to glyphosate.	Iranian Journal of Fisheries Sciences (2011), Vol. 10, No. 3, pp. 383	5.4.1 case b) Relevant but supplementary information: LC50 generated for sturgeon species. Glyphosate products used. Guideline not mentioned but suitable methods described. Conducted in Iran.
428	CA 8.2	Li Jia et al.	2017	Acute toxicity study of glyphosate and cyhalofop-butyl to <i>Daphnia carinata</i> .	Acta Prataculturae Sinica (2017), Vol. 26, No. 9, pp. 148	5.4.1 case b) Relevant but supplementary information: The herbicides evaluated in the study were a 41% glyphosate isopropylamine saline water agent. The study was not conducted according to GLP and the test substance source could not be verified. The authors state that glyphosate has an obvious dose-effect relation to the moving inhibition and fatality rate of <i>Daphnia carinata</i> s. The routinely used concentration of the two is significantly higher than the LC50 and is strongly toxic to <i>Daphnia carinata</i> s. However, given the lack of standard guidelines, an unclear method design and approach, as well as challenges in interpreting the study results make reaching any conclusions arising from the study challenging at best.
429	CA 8.2	Li Jiao et al.	2010	Acute Toxicity of Eight Pesticides on the Development of Sea Urchin Embryos.	Asian Journal of Ecotoxicology (2010), Vol. 5, No. 2, pp. 255	5.4.1 case b) Relevant but supplementary information: The study of the toxicity to the sea urchin embryos, was not conducted or based on a relevant guideline. Test concentrations were from 0.1 to 50 mg/L of glyphosate technical. The relationship between EC50 and LogP values was the main discussion of the article.
524	CA 8.2	Puertolas L. et al.	2010	Evaluation of side-effects of glyphosate mediated control of giant reed (<i>Arundo donax</i>) on the structure and function of a nearby Mediterranean river ecosystem.	Environmental research (2010), Vol. 110, No. 6, pp. 556	5.4.1 case b) Relevant but supplementary information: The effect of the herbicide Herbolex (mixture of glyphosate isopropyl amine salts and surfactant compounds) on the structure and function of a nearby river ecosystem after application of glyphosate in the riparian vegetation was evaluated. Therefore, in situ bioassays with transplanted <i>Daphnia magna</i> , field collected caddis fly (<i>Hydropsyche exocellata</i>) and benthic macroinvertebrate structure and function were investigated. The structure of the benthic macroinvertebrate assemblages was assessed at the same time as well as two additional time-points before application (5 and two month before). Transplants with <i>Daphnia magna</i> were deployed at the day of application and 12 days afterwards, whereas <i>Hydropsyche exocellata</i> samples were collected at the day of application and 3 days afterwards. Concentration of glyphosate and the metabolite AMPA was analysed in the river water samples collected from the studied sites at the day of application and two, three and 12 days afterwards. But other chemicals were not analysed. The herbicide was applied at 2.1 kg glyphosate/ha in an area of 0.5 ha of riparian forest, but the exact place is not specified. Furthermore, no data on the weather conditions were collected which may have had an influence on the community structure. No exact biological data regarding the macroinvertebrate abundance is reported. However, as no results were reported in values reflecting agreed endpoints for the ecological risk assessment and the information is insufficient to transfer values

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						in such endpoints, the study can be considered as supportive information only.
567	CA 8.2	Shiogiri N. S. et al.	2010	Ecotoxicity of glyphosate and atrazine (R) for surfactant on guaru (<i>Phalloseros caudimaculatus</i>).	Acta Scientiarum Biological Sciences (2010), Vol. 32, No. 3, pp. 285	5.4.1 case b) Relevant but supplementary information: Conducted in Brazil, looking at comparison of toxicity of glyphosate products with different amounts of surfactant to different fish species and impact on electrical conductivity, dissolved oxygen and pH.
582	CA 8.2	Song H.	2010	Toxic action of acetamiprid, glyphosate and their combined pollution on <i>Hydra magnipapillata</i>	Anhui Nongye Kexue (2010), Vol. 38, No. 20, pp. 10811	5.4.1 case b) Relevant but supplementary information: Test species (freshwater polyp) collected from a rural pond in China. It is not clear what previous exposure the test species may have had to pesticides. It is not clear if the glyphosate is technical grade or product; the concentrations are from 0.14 to 36 mg/L.
583	CA 8.2	Song H. et al.	2010	The Single and Binary-Combined Acute Toxicities of Five Common Pesticides on <i>Hydra Magnipapillata</i>	Journal of Anhui Normal University (Natural Science) (2010), Vol. 33, no. 2, pp. 159	5.4.1 case b) Relevant but supplementary information: Test species (freshwater polyp) collected from rural pond in China, it is not clear what exposure the test species may have had to pesticides or other chemicals previously. It is not clear if the glyphosate is technical material or product; the concentrations are from 40 to 227 mg/L.
618	CA 8.2, CP 10.2	Usenko O. M. et al.	2010	Effect of fluorine containing herbicides on functional activity of algae	Gidrobiologicheskii Zhurnal (2010), Vol. 46, No. 1, pp. 75	5.4.1 case b) Relevant but supplementary information: Phytoplankton collected in a field in Ukraine. Unclear what exposure the test species may have had to pesticides or other chemicals previously. Test design is not specified at all. Unclear main points: acclimatisation period, application of test substance, number of replicates or cells per replicates. Unclear if result values refer to product or active ingredient. No results in values which can be used for the risk assessment.
192	CA 8.2.1	Alishahi M. et al.	2019	Comparative toxicities of five herbicides on nauplii of <i>Artemia franciscana</i> as an ecotoxicity bioindicator.	IRANIAN JOURNAL OF FISHERIES SCIENCES (2019), Vol. 18, No. 4, pp. 716	5.4.1 case b) Relevant but supplementary information: The material and methods section lack some important information. OECD standard methods were mentioned in the publication; however, the test guideline or specific validity criteria were not specified. Furthermore, information on preparation, application of the test item or exposure conditions are missing. No results for the control group are available to put the biological effects in context. Also no mortality results for all treatment group are given. At the end of the test, an endpoint was derived, but further statistical information (assessment of statistical power, confidence intervals) are not stated. Furthermore, there was no analytical verification of test concentrations reported. The study is considered unreliable.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
193	CA 8.2.1	Alishahi M. et al.	2016	Acute toxicity evaluation of five herbicides: paraquat, 2,4-dichlorophenoxy acetic acid (2,4-D), trifluralin, glyphosate and atrazine in <i>Luciobarbus esocinus</i> fingerlings.	Iranian Journal of Veterinary Medicine (2016), Vol. 10, No. 4, pp. 319	5.4.1 case b) Relevant but supplementary information: Although the study was stated to have been conducted according to a recognised test guideline (OECD 203), no validity criteria was presented. The selected fish species and their approximate origin are described but environmental holding conditions (water quality) for the fish handling prior to and during the study were not included. There was limited test substance information presented, with no rationale presented for the selection of exposure concentrations. glyphosate concentrations were also not measured/confirmed during the evaluation period. Behavioural observations relating to the lethargy and swimming behaviour are not considered directly related to the nominal exposure concentration. The study is considered unreliable.
211	CA 8.2.1	Ayanda O. I. et al.	2015	Acute toxicity of glyphosate and paraquat to the African catfish (<i>Clarias gariepinus</i> , Teugels 1986) using some biochemical indicators	Tropical zoology (2015), Vol. 28, No. 4, pp. 152	5.4.1 case b) Relevant but supplementary information: The test items were not identified, therefore it is not clear what was actually tested and to which compound the effects / results can be assigned.
277	CA 8.2.1	da Cruz C. et al.	2016	Sensitivity, ecotoxicity and histopathological effects on neotropical fish exposed to glyphosate alone and associated to surfactant	Journal of Environmental Chemistry and Ecotoxicology (2016), Vol. 8, No. 3, pp. 25	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP and/or according to a recognized test guideline and there are no validity criteria presented. The authors state that glyphosate alone and in association with Aterbane® BR was classified as practically non-toxic, whereas Aterbane® BR alone was considered moderately toxic for the tested organisms. However, due to insufficient explanation of experimental set-up (e.g. test substance, test medium, statistical analysis) and lack of experimental standard procedures (e.g. analytical verification), the study is may be used only as supportive information.
307	CA 8.2.1	Druart C. et al.	2017	A full life-cycle bioassay with <i>Cantareus aspersus</i> shows reproductive effects of a glyphosate-based herbicide suggesting potential endocrine disruption.	Environmental pollution (2017), Vol. 226, pp. 240	5.4.1 case b) Relevant but supplementary information: The test design is novel and the achieved endpoints cannot be used in an EU ecotox risk assessment for Annex I renewal.
327	CA 8.2.1	Gaur H. et al.	2019	Glyphosate induces toxicity and modulates calcium and NO signaling in zebrafish embryos.	Biochemical and biophysical research communications (2019) Vol. 513, No. 4, pp. 1070	5.4.1 case b) Relevant but supplementary information: Considered supplementary as the approaches used are not used in Ecotox risk assessment for Annex I renewal.
361	CA 8.2.1	Isaac A. O. et al.	2017	Behavioural and some physiological assessment of glyphosate and paraquat toxicity to juveniles of African catfish, <i>Clarias gariepinus</i> .	Pakistan Journal of Zoology (2017), Vol. 49, No. 1, pp. 183	5.4.1 case b) Relevant but supplementary information: Although the study itself is not directly related to an EU level ecotoxicological risk assessment for Annex I renewal purposes, the study was potentially considered as sublethal effects on fish behaviour following exposure to glyphosate were described.
372	CA 8.2.1	Jofre D. M. et al.	2013	Fish Toxicity of Commercial Herbicides Formulated With Glyphosate	Journal of Environmental & Analytical Toxicology. Vol. 4, no. 1, pp. 1	5.4.1 case b) Relevant but supplementary information: Data considered supplemental as the test design and the achieved endpoints are not those used in EU risk assessment. The test substance although not specifically identified, in terms of the SL salt of glyphosate, looks like it could be at a similar a.e. content.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
414	CA 8.2.1	Le Mer C. et al.	2013	Effects of chronic exposures to the herbicides atrazine and glyphosate to larvae of the threespine stickleback (<i>Gasterosteus aculeatus</i>).	Ecotoxicology and environmental safety (2013), Vol. 89, pp. 174	5.4.1 case b) Relevant but supplementary information: The glyphosate analytical concentrations were highly variable, but overall based on the 2008 dataset, the mean measured values were within 25% of the nominal exposure concentrations. The sticklebacks were obtained from the natural environment and therefore prior exposure to chemicals cannot be discounted, although the fish were selected from the same location in two different years and achieved similar assay results in both years. The test system was considered robust based on the performance of the two positive control groups. Concerning the test design, the study was conducted according to methods described in Hahlbeck (2004) 'The juvenile threespined stickleback (<i>Gasterosteus aculeatus</i> L.) as a model organism for endocrine disruption: I. Sexual differentiation' whilst all available information is presented in this paper, the environmental conditions employed during the chronic exposure part of the test are not confirmed and validity criteria are not clearly stated. The achieved measured concentrations were also lower than is required for this study type and analysis in one of the two studies described was not complete. Whether the study was conducted according to GLP cannot be confirmed from the paper. Given some of the uncertainty over elements of the test design, the study should be considered unreliable.
523	CA 8.2.1	Prevot-D'Alvise N. et al.	2013	Acute toxicity of a commercial glyphosate formulation on European sea bass juveniles (<i>Dicentrarchus labrax</i> L.): gene expressions of heme oxygenase-1 (ho-1), acetylcholinesterase (AChE) and aromataases (cyp19a and cyp19b).	Cellular and molecular biology (2013), Vol. 59 Suppl, pp. OL1906	5.4.1 case b) Relevant but supplementary information: Test item was appropriately identified as being linked to the representative formulation. Test design does not however follow a recognised approach, uneven sample sizes and large fish were exposed. The rationale behind test concentration selection was not clear and dose preparation was unclear as exposure rates could not be confirmed. Effects of acetone on fish were not discussed. Endpoints anyway demonstrate low toxicity compared to existing list of endpoints.
529	CA 8.2.1	Rahnama R. et al.	2018	Acute toxicity of herbicides on the survival of adult shrimp, <i>Artemia Franciscana</i>	Iranian Journal of Toxicology (2018), Vol. 12, No. 6, pp. 45	5.4.1 case b) Relevant but supplementary information: Important information is missing in the material and methods section. The preparation and application of the test solutions was not reported. The test item is not adequately specified. The given purity of 41 % indicates that a product was tested. However, it is not clear whether the test concentrations refer to the product or to the active substance. In addition, the biological results of the test were not sufficiently stated. The endpoint data presented in the paper is difficult to understand. Table 3 in the article indicates a 48 hour LC50 of 17.483 mg/L, whilst in Figure 2, the 48 hour LC50 is 38.897 mg/L. Therefore, the reliability of the data presented in the article is questionable. In addition, it is unclear whether the animals were fed during the assay. Figure 3 appears to show anemia with egg bags and highlights the contents of the rudimentary intestine as being those

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
549	CA 8.2.1	Sadeghi A. et al.	2014	Investigation of LC50, NOEC and LOEC of glyphosate, deltamethrin and pretilachlor in guppies (<i>Poecilia reticulata</i>)	Iranian Journal of Toxicology (2014), Vol. 8, No. 26, pp. 1124	exposed to herbicides. This observation is not supported by any information presented in the paper. No mortality data for the test concentrations nor for the controls is presented to evaluate the results. Assessment of the statistical power of the assay is not possible. Furthermore, there was no analytical verification of test concentrations reported, there is no guideline stated and it is non GLP. Multiple doses were tested, but a positive control group was not included, so the performance / robustness of the test system cannot be confirmed. The study is considered unreliable. 5.4.1 case b) Relevant but supplementary information: Study was considered to be conducted according to a recognised guideline via the cited reference in the paper, but the test system specifics cannot be confirmed. For example, there are validity criteria stated but water qualities / environmental conditions are not presented, so the suitability of the test system cannot be confirmed. Additionally, there was no analytical verification of the exposure concentrations, so exposure cannot be confirmed. The source and age / size of the fish are not presented in the paper, so the appropriateness of the test system cannot be confirmed. Additionally, the size of the aquariums used is stated (120 L) but the volume of test or control medium in these vessels is not stated, therefore fish loading rates cannot be determined. The test substance is identified as a 'commercial 41% glyphosate' – no other information are presented so effects cannot clearly be related to the active substance glyphosate, and the relevance of the test item used to the EU renewal of MON 52276 cannot be confirmed. The study is considered unreliable.
558	CA 8.2.1	Saska P. et al.	2017	Treating Prey With Glyphosate Does Not Alter the Demographic Parameters and Predation of the <i>Harmonia axyridis</i> (Coleoptera: Coccinellidae).	Journal of economic entomology (2017), Vol. 110, No. 2, pp. 392	5.4.1 case b) Relevant but supplementary information: Exposure was performed via treated prey, which does not correspond to an adequate route of exposure regarding current test guideline for non-target-arthropods. 2 mL test solution was applied to 50 aphids placed on a filter paper in a petri dish, (dimension unknown). There is no analytical verification, and the study does not conform to guidelines nor GLP. The study is well documented, but no endpoints could be derived which can be applied for the risk assessment. Therefore, the study is considered as supplementary only.
614	CA 8.2.1	Uchida M. et al.	2012	Toxicity evaluation of glyphosate agrochemical components using Japanese medaka (<i>Oryzias latipes</i>) and DNA microarray gene expression analysis	The Journal of toxicological sciences (2012), Vol. 37, No. 2, pp. 245	5.4.1 case b) Relevant but supplementary information: The material and methods part lack some important information. Only glyphosate was sufficiently documented, but the formulation Roundup is not specified. In addition, it is unclear whether the test concentrations for the formulation refer to the active ingredient or to the product. The test design is not adequately described. Only a concentration range was given and tested dose rates remain unclear. The performance of a control group as well as the description of observations is not reported. No mortality data neither for the test concentrations nor for

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
						the controls was given to evaluate the results. Furthermore, there was no analytical verification of test concentrations reported. No suitable exposure throughout the test was demonstrated and thus the reliability of the study is questionable. The test guideline followed was not stated nor was the study conducted to GLP.
622	CA 8.2.1	Velasques R. R. et al.	2016	Roundup® in Zebrafish: Effects on Oxidative Status and Gene Expression.	Zebrafish (2016), Vol. 13, No. 5, pp. 432	5.4.1 case b) Relevant but supplementary information: The data presented demonstrates that in the presence of a toxicant, there are changes in the oxidative status of zebrafish gills and liver tissue. However, these data cannot be related to an Annex I risk assessment for renewal.
654	CA 8.2.1	Yusuf S. et al.	2014	Effect of glyphosate-based herbicide on early life stages of Java medaka (<i>Oryzias latipes</i>): a potential tropical test fish.	Marine pollution bulletin (2014), Vol. 85, No. 2, pp. 49	5.4.1 case b) Relevant but supplementary information: There is insufficient explanation provided on the analytical verification of the test concentrations. The test concentrations were high ranging from 100 to 500 ppm. A regulatory endpoint is not available. There is no verification of dose levels, and the study does not conform to any guidelines nor GLP. The article can be considered as supplementary information only.
663	CA 8.2.1	Zhang S. et al.	2017	Biological impacts of glyphosate on morphology, embryo biomechanics and larval behavior in zebrafish (<i>Danio rerio</i>).	Chemosphere (2017), Vol. 181, pp. 270	5.4.1 case b) Relevant but supplementary information: Provides information on a test species that is relied upon in the risk assessment. But endpoints cannot be related to an EU level ecotox risk assessment.
262	CA 8.2.1, CP 10.2.1	Chandrasekera W. U. et al.	2011	The lethal impacts of Roundup® (glyphosate) on the fingerlings of guppy, <i>Poecilia reticulata</i> Peters, 1859.	Asian Fisheries Science (2011), Vol. 24, No. 4, pp. 367	5.4.1 case b) Relevant but supplementary information: The material and methods lacks important information. The purity of the formulation is not presented. There is a narrative on water qualities / environmental conditions during the test, but there is no actual data presented to confirm the acceptability of the exposure / test conditions except for a value presented for dissolved oxygen levels. There was no analytical verification of test concentrations reported and therefore the level of exposure cannot be confirmed. The study is considered unreliable.
645	CA 8.2.1, CP 10.2.1	Xie RuiTao et al.	2010	The acute toxicity of five pesticides to yellow catfish <i>Pelteobagrus vachelli</i> .	Fisheries Science (2010), Vol. 29, No. 5, pp. 274	5.4.1 case b) Relevant but supplementary information: Acute effects on Yellow Catfish in a static 96 h test. The application method (preparation of test solution etc.) is not specified. The concentrations used is unclear, and appears to be tested in a range between 7 to 20 mg/L. No information on the test item whether it was product or active ingredient was provided. Therefore, the biological results can not be used for the risk assessment.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
501	CA 8.2.2	Panetto O. S. et al.	2019	The effects of Roundup® in embryo development and energy metabolism of the zebrafish (Danio rerio)	Comparative biochemistry and physiology (2019), Vol. 222, pp. 74	5.4.1 case b) Relevant but supplementary information: The acute 96 hour-LC50 for zebrafish embryo after exposure to Roundup was determined to be 58.3 mg/L. Seven test concentrations between 3.5 and 350 mg/L were used with 4 replicates and 20 embryos each. It was stated that the test was performed based on OECD guideline 236. This study type has six validity criteria for the control group, including fertilization rate success (required $\geq 70\%$ in batch tested), hatching rate at 96 hours (required $\geq 80\%$) and overall survival (required $\geq 90\%$). There is also a validity criteria requirement for the results of a positive control group, using 3, 4-dichloroaniline, to achieve a minimum of 30% mortality at 96 hours. There are also two water quality criteria relating to water temperature (required 26 ± 1 °C at any time during the test) and for dissolved oxygen at 96 hours to be $> 80\%$ of the saturation. Whilst dissolved oxygen levels at 6 mg O₂/L were achieved in the test, the temperature was outside of the validity criteria limits, being maintained at 28 ± 1 °C for the study duration. Therefore the dissolved oxygen level cannot be confirmed as reporting of dissolved oxygen in terms of mg O₂/L requires information on atmospheric pressure and temperature to resolve actual dissolved oxygen in terms of percentage saturation. A slight increase in temperature by a degree Celsius is not overly concerning, however, it is difficult to conclude on the reliability of the study as only one other validity criteria is mentioned, with respect to control survival, with 2% mortality achieved in the controls. There is no information presented on the fertilization rate of the batch of eggs used, nor is there hatching rates presented for the controls or the treatment groups. In addition, the performance of the test system cannot be confirmed as the results of a positive control group were not included. In addition, there are no biological data for the treatment groups presented other than in figures, so the data in the figures cannot be confirmed. Furthermore, claims that the achieved LC50 of 58.3 mg/L is 15,000 times lower than that used in agriculture is not supported by corresponding surface water monitoring data. A final point is that the test concentrations in the test system were not analytically verified and therefore, exposure concentrations cannot be confirmed. The study is considered unreliable.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
617	CA 8.2.2, CA 8.2.3, CP 10.2.2, CP 10.2.3	Uren Webster T. M. et al.	2014	Effects of glyphosate and its formulation, roundup, on reproduction in zebrafish (<i>Danio rerio</i>).	Environmental science & technology (2014), Vol. 48, No. 2, pp. 1271	5.4.1 case b) Relevant but supplementary information: The test substance Roundup GC is not the representative formulation for the Annex I renewal. There was only a single glyphosate exposure group at 10 mg/L prepared from analytical grade. The purity of the material was not confirmed, but it was stated to be analytical grade. The study provides no endpoints for glyphosate, that could be used in the ecotoxicology risk assessment for Annex I renewal. Thus the study is considered supplementary only.
439	CA 8.2.2.1, CP 10.2.3	Lugowska K.	2018	The effects of Roundup on gametes and early development of common carp (<i>Cyprinus carpio</i> L)	Fish physiology and biochemistry (2018), Vol. 44, No. 4, pp. 1109	5.4.1 case b) Relevant but supplementary information: The material and methods part of the study lack some important information. The preparation of test solutions is missing. The time course of the experiment is unclear. Furthermore, there was no analytical verification of test concentrations reported. Suitable exposure throughout the study was not demonstrated and thus the reliability of the study is questionable. The performance / validity of the test cannot be confirmed as there was no positive control included validity criteria were not stated. No regulatory endpoint useful for risk assessment is given. The study is not to a guideline and is not GLP.
644	CA 8.2.3	Xia S. et al.	2013	Induction of vitellogenin gene expression in medaka exposed to glyphosate and potential molecular mechanism	Zhongguo Huanjing Kexue (2013), Vol. 33, No. 9, pp. 1656	5.4.1 case b) Relevant but supplementary information: The study was not conducted according to GLP and a relevant guideline was not followed. The current EU stepwise endocrine approach is detailed, and the approach conducted within this study does conform to the suggested guidance. Significant limitations in the study include a lack of a standard testing approach or specific validation criteria. The test concentrations were not analytically verified and the critical dose regime provided to the Medaka is lacking. Similarly the source of the fish tested is unknown. No clear dose response relationship or derived endpoint from the study could be determined.
191	CA 8.2.4	Alhewairimi S. S.	2017	Toxicity of the herbicide glyphosate to non-target species <i>Caenorhabditis elegans</i> .	Journal of Food, Agriculture & Environment (2017), Vol. 15, No. 2, pp. 97	5.4.1 case b) Relevant but supplementary information: The study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The generated endpoints are not based on direct effects on the nematode, but instead, are based on the optical density related to the density of bacteria present in the NGM agar test cultures. It is unclear if the presented mortality data were due to direct effects of glyphosate in the cultures, or due to indirect effects associated with reduced feeding activity. There was no test substance information presented and glyphosate concentrations were not measured / confirmed during the study. Finally, there were no quantifiable endpoints presented in the paper, that would be considered applicable to an EU level ecotoxicological risk assessment.

No	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
209	CA 8.2.4	Avigliano L. et al.	2014	Effects of glyphosate on growth rate, metabolic rate and energy reserves of early juvenile crayfish, <i>Cherax quadricarinatus</i> M.	Bulletin of environmental contamination and toxicology (2014), Vol. 92, No. 6, pp. 631	5.4.1 case b) Relevant but supplementary information: Enzymatic endpoints discussed that are not used in EU level assessment. Mortality and survival data not discussed in paper.
273	CA 8.2.4	Cordova Lopez A. M. et al.	2019	Exposure to Roundup® affects behaviour, head regeneration and reproduction of the freshwater planarian <i>Girardia tigrina</i>	Science of the total environment (2019), Vol. 675, pp. 453	5.4.1 case b) Relevant but supplementary information: This is an invasive flatworm species in the EU. No specific test guidelines are available for this type of study, despite the range of endpoints that appear to have been covered.
295	CA 8.2.4	Demetrio P. M. et al.	2012	Effects of pesticide formulations and active ingredients on the coelenterate <i>Hydra attenuata</i> (Pallas, 1766).	Bulletin of environmental contamination and toxicology (2012), Vol. 88, No. 1, pp. 15	5.4.1 case b) Relevant but supplementary information: Endpoints for <i>Hydra attenuata</i> are not a data requirement for the renewal data requirements under 1107/2009.
351	CA 8.2.4	Hansen L. R. et al.	2016	Behavioral responses of juvenile <i>Daphnia magna</i> after exposure to glyphosate and glyphosate-copper complexes.	Aquatic toxicology (2016), Vol. 179, pp. 36	5.4.1 case b) Relevant but supplementary information: Paper considers the influence of metals in <i>daphnia</i> testing and their influence on toxicity. Soils on the toxicity of endpoints considering speciation and enhanced toxicity in the presence of metals are not used in the EU level ecotox risk assessment.
401	CA 8.2.4	Kumar M. S. A. et al.	2013	Toxic impacts of two organophosphorus pesticides on the acetylcholinesterase activity and biochemical composition of freshwater fairy shrimp <i>Streptocephalus dichotomus</i> .	International Journal of Pharma and Bio Sciences (2013), Vol. 4, No. 2, pp. B-966	5.4.1 case b) Relevant but supplementary information: The test does not follow a recognised test guideline. There are no details on the test design used in the exposure part of the test, such as test media preparation and test vessels / replication details, and the water quality / environmental conditions during the exposure period. Nor are there any validity criteria stated, which are necessary to establish the acceptability of the study (eg. shrimp cyst hatching success and the percentage survival in the control group in both toxicity tests). There are no biological data presented to confirm the reported LC50 values. There is no rationale described justifying the duration of exposure. Details on the test substances used in the test are not presented and there is no analytical verification of test concentrations, so exposure levels cannot be verified. The study is considered unreliable.
539	CA 8.2.4	Reno U. et al.	2016	EFFECTOS SUBLETALES DE CUATRO FORMULACIONES DE GLIFOSATO SOBRE <i>Daphnia magna</i> Y <i>Ceriodaphnia dubia</i> (CRUST ACEA, CLADOCERA)	Natura Neotropicalis (2016), Vol. 47, No. 1, pp. 7	5.4.1 case b) Relevant but supplementary information: The aim of the study was to compare the chronic toxicity of four different commercially available glyphosate products to <i>Daphnia magna</i> and <i>Ceriodaphnia dubia</i> . The study was not conducted according to GLP and the study design lacks some details compared with relevant guidelines. The test concentrations are based on nominal and no analytical verification of test item concentrations were conducted (only analysis of stock solutions using an unspecific detector). Although the details of the statistical analyses are reported, the study report only describes where significant differences were found. No detailed results including standard deviations of the investigated parameters are provided. As the study is based on different glyphosate products, the toxicity of glyphosate active substance alone is unknown and therefore endpoints generated from this study are not quantifiable and deliver only supplementary information.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
547	CA 8.2.4	Ruiz-Gonzalez E. L. et al.	2018	Assessment of median lethal concentration (CL50) of pollutants on Macrobrachium tenellum juveniles	Latin American Journal of Aquatic Research (2018), Vol. 46, No. 3, pp. 589	5.4.1 case b) Relevant but supplementary information: Considered supplementary as the test substance cannot be explicitly identified. Information presented suggests that this is not the representative formulation for the renewal as it is based on the potassium salt of glyphosate.
647	CA 8.2.4	Xu Y-g. et al.	2015	Joint Toxicity of Glyphosate and As(III) to Daphnia magna in Aquatic Environment	Journal of Agro-Environment Science (2015), Vol. 34, No. 11, pp. 2076	5.4.1 case b) Relevant but supplementary information: This study concentrates on models used to estimate the individual and mixture toxicity of glyphosate and As (III) to Daphnia magna. LC50 values were compared with measured data. The study was not conducted according to GLP, however the acute toxicity studies were conducted to a relevant ISO guideline. Preparation and dose verification were not performed therefore the endpoint is questionable. The study is considered unreliable.
292	CA 8.2.4, CP 10.2.2	Deepananda K. H. M. A. et al.	2011	Acute toxicity of a glyphosate herbicide, Roundup (R), to two freshwater crustaceans.	Journal of the National Science Foundation of Sri Lanka (2011), Vol. 39, No. 2, pp. 169	5.4.1 case b) Relevant but supplementary information: After exposure to Roundup® the 48 hour acute LC50 for adult copepod <i>Phyllocladonotus annae</i> was determined to be 1.059 mg/L. This endpoint is questionable as there was only 19% mortality at the highest exposure concentration in the test (1.6 mg/L). For the second species, the 72 and 96 hour LC50 for decapod shrimp <i>Cardina nilotica</i> was determined to be 107.53 and 60.97 mg/L, respectively. However, the mean percentage mortality at both timepoints was identical from Table 1 in the paper. As there are no biological data presented in the paper, the observed mortality and the LC50 calculation cannot be confirmed. The formulation content is identified as Roundup® (360g/L, 98%). However, the presented purity appears to be incorrectly stated, as a formulation with 98% purity, would suggest a technical material has been used, so there is uncertainty in actually what has been tested in the study. The tests were conducted according to EPA Guideline "Methods of Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms". However, the origin of the organisms is not given. Therefore, previous exposure the test species may have had to pesticides or other chemicals is unclear. Furthermore, there was no analytical verification of test concentrations reported and the study is non-GLP, thus the reliability of the endpoint is questionable. Given the uncertainty in what was actually tested, the calculated endpoints and the conduct of the test, the study is considered unreliable.
571	CA 8.2.4.1, CA 8.6, CA 8.7	Siltmaee M. et al.	2013	Ecotoxicological effects of different glyphosate formulations	Applied soil ecology (2013), Vol. 72, pp. 215	5.4.1 case b) Relevant but supplementary information: The study design and overall conduct were well described. The D. magna toxicity test was performed according to OECD guideline 202 but validity criteria were not mentioned. Analytical verification of the test materials and exposure concentrations within the study was also lacking. Overall, the study is considered to be of limited relevance to the EU annex renewal of glyphosate as the D. magna toxicity test

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
229	CA 8.2.4.1, CP 10.2.1	Boonsoong B. et al.	2012	Acute toxicity of Roundup and carboxulfan to the Thai fairy shrimp, <i>Branchinella thailandensis</i> .	Communications in agricultural and applied biological sciences (2012), Vol. 77, No. 4, pp. 431	was only a small part of the study, and the soil portion of the study was conducted using exaggerated soil concentrations (up to 1000 times relevant levels). For these reasons, the study is considered supplemental only. 5.4.1 case b) Relevant but supplementary information: The study was not conducted according to a recognised test guideline and no validity criteria are presented for control group performance, so the robustness of the assay can not be concluded. In the materials and methods, there is insufficient information presented on the test medium preparation approach and on the environmental conditions used in the test. There was no chemical analysis and therefore exposure cannot be confirmed. There are insufficient explanations provided on the experimental design, particularly environmental condition and conduct during the test. The study is considered unreliable.
296	CA 8.2.4.1, CP 10.2.1	Demetrio P. M. et al.	2014	The effect of cypermethrin, chlorpyrifos, and glyphosate active ingredients and formulations on <i>Daphnia magna</i> (Straus).	Bulletin of environmental contamination and toxicology (2014), Vol. 93, No. 3, pp. 268	5.4.1 case b) Relevant but supplementary information: The test was not performed according to a relevant guideline. Although procedures are well documented, the water qualities during testing are not reported (only stock culture holding conditions are reported) and the test design in the study is not described, such as the number of animals exposed, test media preparation details and acclimation period prior to exposure. There are no biological data presented in order to confirm the achieved endpoints. The glyphosate formulation used in the testing is not the representative formulation for the material and for the formulation, is the increased sensitivity of daphnia to the formulation, which is considered attributable to the co-formulants in the formulation and not to glyphosate. Based on the uncertainty associated with the materials and methods as described above, the study is considered as supplementary only.
436	CA 8.2.4.2, CA 8.2.5.2	Liu Xiao-wei et al.	2012	Toxicological effect of paraquat and glyphosate on cladoceran <i>Moina macrocopa</i> .	Shengtaixue Zazhi (2012), Vol. 31, No. 8, pp. 1984	5.4.1 case b) Relevant but supplementary information: The conclusions are unclear based on several factors including the impact of the density of the algal food source and the temperature of the test media. This study is not adequately described – for example, water quality / environmental conditions cannot be confirmed from the paper, there were no validity criteria stated and no analytical verification of exposure concentrations was undertaken. Given the uncertainty over the test design and the procedures undertaken and the fact that the study was not conducted according to a recognised test guideline relevant for the EU risk assessment, the test is considered as unreliable.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
278	CA 8.2.6	Dabney B. L. et al.	2018	Low-dose stimulation of growth of the harmful alga, <i>Prymnesium parvum</i> , by glyphosate and glyphosate-based herbicides.	Harmful algae (2018), Vol. 80, pp. 130	5.4.1 case b) Relevant but supplementary information: This paper does not present endpoints that can be used in the ecotox risk assessment for the renewal. The information are however considered supportive to discussions over hormesis.
362	CA 8.2.6	Issa A. A. E. et al.	2013	Alterations in some metabolic activities of <i>Scenedesmus quadricauda</i> and <i>Merismopedia glauca</i> in response to glyphosate herbicide.	Journal of Biology and Earth Sciences (2013), Vol. 3, No. 1, pp. B17	5.4.1 case b) Relevant but supplementary information: The reported endpoints in terms of growth rates and pigment levels are not reliable to the EU level risk assessment for the renewal. The identity of the test items cannot be confirmed.
407	CA 8.2.6	Lam C. H. et al.	2020	Toxicity of herbicides to cyanobacteria and phytoplankton species of the San Francisco Estuary and Sacramento-San Joaquin River Delta, California, USA.	Journal of environmental science and health. Part A, Toxic/hazardous substances & environmental engineering (2020), Vol. 5, pp. 107	5.4.1 case b) Relevant but supplementary information: As the composition of the Roundup used in the test cannot be confirmed, the study must be considered as being supplementary. Roundup Custom is for aquatic uses so would not contain surfactants. It is not clear from the study if the product was tested with an approved surfactant added or not as would be detailed on the label. There is limited information in the paper on the label. Roundup Custom is not the representative formulation for the renewal and aquatic uses are not on the current GAP table.
285	CA 8.2.7	de Campos Oliveira R. et al.	2016	Assessment of the potential toxicity of glyphosate-based herbicides on the photosynthesis of <i>Nitella microcarpa</i> var. <i>wrightii</i> (Charophyceae)	Phycologia (2016), Vol. 55, no. 5, pp. 577	5.4.1 case b) Relevant but supplementary information: Despite the study using a recognised OECD guideline, the endpoints in terms of respiration rates are not relevant to an EU level risk assessment for Annex I renewal, which specifically considers inhibition of glyphosate growth rates. The study considers technical glyphosate, Roundup and AMPA. Despite the technical material being identified, the formulation was not. It is not possible to conclude on the effects caused by the formulation as it was inferred that the product contains POEA.
288	CA 8.2.7	de Jesus Veloso Castro A. et al.	2015	Using a toxicity test with <i>Ruppia maritima</i> (Linnaeus) to assess the effects of Roundup.	Marine pollution bulletin (2015), Vol. 91, No. 2, pp. 506	5.4.1 case b) Relevant but supplementary information: This paper presents information on the effects of glyphosate on a saline tolerant species. However, there is no glyphosate exposure presented in the paper so it is very difficult to relate the observed effects to an exposure event / agricultural application.
511	CA 8.2.7	Pereira P. C. et al.	2019	Acute Toxicity of Herbicides and Sensibility of Aquatic Plant <i>Wolffia brasiliensis</i> as a Bioindicator Organism	Planta Daninha (2019), Vol. 37, pp. e019201636	5.4.1 case b) Relevant but supplementary information: This paper describes a non-standard aquatic plant ecotoxicity test for a non-EU native species, and is therefore difficult to relate to an EU level ecotox risk assessment. The formulation used is specific to aquatic applications that are not on the proposed GAP for the renewal.
548	CA 8.2.7	Rzymiski P. et al.	2013	The effect of glyphosate-based herbicide on aquatic organisms - a case study.	Limnological Review (2013), Vol. 13, No. 4, pp. 215	5.4.1 case b) Relevant but supplementary information: Information may be relevant to the wider discussion on trophic interactions, but cannot be related to the EU level ecotox risk assessment for the renewal.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
180	CA 8.2.8	Abdulkareem S. I. et al.	2015	Histopathological effects of lethal and sub-lethal concentrations of glyphosate on gills and liver of African catfish, <i>Clarias gariepinus</i> .	Journal of Aquatic Sciences (2015), Vol. 30, No. 1, pp. 53	5.4.1 case b) Relevant but supplementary information: Although blood, gill and liver enzyme levels are not relatable to an EU level ecotoxicological risk assessment for Annex I renewal purposes, the study was considering acute effects and chronic sublethal effects on fish following exposure to glyphosate. The study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The environmental holding conditions (water quality) for the fish prior to and during the study were not included. The fish loading rate (g/fish L) was 20.5 g fish/L, which far exceeds the loading rate required for chronic static renewal fish tests. The typical loading rates for studies submitted to support regulatory submission for Annex I renewals in the EU are 0.8 to 1.0 g fish/L. The impact of such high fish densities cannot be established, as no water quality measurements were included in the paper, such as the dissolved oxygen levels (mgO ₂ /L) and pH values. There was no test substance information presented, glyphosate concentrations were not measured / confirmed during the 28 day study duration. Behavioural observations in test vessels could not be related to the nominal exposure concentration. Finally, there were no quantifiable endpoints presented in the paper, considered applicable to an EU level ecotoxicological risk assessment for renewal purposes.
181	CA 8.2.8	Abdulkareem S. I. et al.	2013	Effects of sub-lethal concentrations of glyphosate on behaviour and some biochemical parameters of African catfish (<i>Clarias gariepinus</i>)	Proceedings of the 28th annual conference of the Fisheries Society of Nigeria (2013), pp. 188	5.4.1 case b) Relevant but supplementary information: Although blood, gill and liver enzyme levels are not relatable to an EU level ecotoxicological risk assessment the renewal purposes, the study was considered as supplemental due to the sublethal effects on fish behaviour following exposure to glyphosate. The study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The fish species and their origin are not described and environmental conditions (water quality) for the fish prior to and during the study have not been included. The fish loading rate (g/fish L test medium) was 20.5 g fish/L, which far exceeds the loading rate required for chronic static renewal fish tests typically required for studies submitted to support regulatory submission for renewals in the EU (0.8 to 1.0 g fish/L). The impact of such high fish densities cannot be established, as no water quality measurements were provided such as levels of dissolved oxygen (mgO ₂ /L) and pH. Similarly, there was no test substance information or rationale presented for the selection of exposure concentrations. glyphosate concentrations were also not measured / confirmed during the 28 day study duration. Behavioural observations relating to the swimming activity are not relatable to the nominal exposure concentration. Finally, there are no applicable EU level ecotoxicological risk assessment quantifiable endpoints presented in the paper.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
186	CA 8.2.8	Agbon A. O. I. et al.	2014	The potential impact of Glyphosate on captured fisheries productivity and sustainability	Proceedings of the 29th annual conference of the Fisheries Society of Nigeria (2014), pp. 17	5.4.1 case b) Relevant but supplementary information: The study was not conducted according to a recognised acute test guideline and there are no validity criteria presented. The overall study duration was 35 days, from which a 96 hr LC50 value was determined. There are no data presented in the paper in terms of mortalities over the first 4 days from which a 96 hr LC50 could be determined. The fish also appear to have been fed for the 35 day duration, which is not in accordance with the recognised acute fish toxicity test guideline used according to the EU No. 283 2013 data requirements. The environmental holding conditions (water quality) for the fish prior to and during the study were not included. The fish loading rate (g/fish L) cannot be determined as no test vessel water volumes are presented. There are no water quality measurements included in the paper, such as the dissolved oxygen levels (mgO2/L) and pH values. There was no test substance information presented, glyphosate concentrations were not measured / confirmed during the 35 day study duration. No sub-lethal behavioural observations were included in the paper. Finally, the presented endpoints cannot be confirmed from the presented information in the paper. The study is considered unreliable.
468	CA 8.2.8	Mohamed I. A-w. et al.	2016	Unique efficacy of certain novel herbicides against Culex pipiens (Diptera: Culicidae) mosquito under laboratory conditions	Advances in Environmental Biology (2016), Vol. 10, No. 8, pp. 104	5.4.1 case b) Relevant but supplementary information: Important information is missing in the material and methods section. The preparation and application of the test solutions as well as the tested concentration range were not reported. The test items were not adequately specified. It is not clear whether the test concentrations refer to the product or to the active substance. Moreover one active ingredient is given as glyphosate isopropylamine which should be formulated as a salt resulting in test concentrations as acid equivalents. In addition, the biological results of the test were not sufficiently stated. No mortality data for the test concentrations nor for the controls was given to evaluate the results. Furthermore, there was no analytical verification of test concentrations reported. The study is not to a guideline and is not GLP. The study is considered unreliable.
472	CA 8.2.8	Mottier A. et al.	2013	Effects of glyphosate-based herbicides on embryo-larval development and metamorphosis in the Pacific oyster, Crassostrea gigas.	Aquatic toxicology (2013), Vol. 128-129, pp. 67	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP and/or according to a recognized test guideline and there are no validity criteria presented. The authors state that the EC50 values computed for the embryotoxicity tests with glyphosate and AMPA were lower than the values reported for regulatory model organisms. The embryotoxicity test appeared more sensitive but also a little more difficult to assess compared to the metamorphosis assay. Given the limitations cited, the study is considered unreliable.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
502	CA 8.2.8, CP 10.2.1	Panwen M. et al.	2013	Acute toxicity of pesticides glyphosate and paraquat on river snails	Siliao Yanjiu (2013) No. 11, pp. 44	5.4.1 case b) Relevant but supplementary information: The material and methods sections lack important information. The test organisms were not specified. Detailed information on preparation and application of test solution is missing. The tested concentrations and the exposure time were not reported in the material and methods. The test item is not specified. It is only stated that it contains 10 % active ingredient, but other ingredients are unknown. No control results are available. Furthermore, it is unclear whether the reported endpoints refer to the active substance or to the product. No analytical verification of test concentrations were performed. The study is considered unreliable.
646	CA 8.2.8, CP 10.2.3	Xu Y. et al.	2010	Acute Toxicity of Ten Pesticides to Larval Red Swamp Crayfish <i>Procambarus Clarkii</i> .	Asian Journal of Ecotoxicology (2010), Vol. 5, No. 1, pp. 50.	5.4.1 case b) Relevant but supplementary information: Effects on red swamp crayfish. Test species raised in and collected from a rice field in Shanghai. It is not clear what exposure the test species may have had to pesticides or other chemicals previously. It is not clear if the glyphosate is technical or product. No biological results (e.g. mortalities) for the control or any test concentration reported. The study is considered unreliable.
214	CA 8.3	Baglan H. et al.	2018	Glyphosate impairs learning in <i>Aedes aegypti</i> mosquito larvae at field-realistic doses.	The Journal of experimental biology (2018), Vol. 221, No. 20, pp 1	5.4.1 case b) Relevant but supplementary information: Information presented on the learning behaviour of mosquito larvae exposed to glyphosate. These data are difficult to relate to an EU level ecotox risk assessment for the renewal.
218	CA 8.3	Bara J. J. et al.	2014	Sublethal effects of atrazine and glyphosate on life history traits of <i>Aedes aegypti</i> and <i>Aedes albopictus</i> (Diptera: Culicidae).	Parasitology research (2014), Vol. 113, No. 8, pp. 2879	5.4.1 case b) Relevant but supplementary information: The test provides information on the impact of glyphosate on mosquito development, but the test design employed is not a recognised approach used for Annex I data generation for renewal purposes. Test item purity not stated, only pestanol grade. No chemical analysis.
256	CA 8.3	Castilhos R. V. et al.	2014	Selectivity of pesticides used in peach orchards on eggs and pupae of the predator <i>Chrysoperla externa</i> . Seletividade de agrotóxicos utilizados em pessegueiro sobre ovos e pupas do predador <i>Chrysoperla externa</i> .	Ciencia Rural (2014), Vol. 44, No. 11, pp. 1921	5.4.1 case b) Relevant but supplementary information: The glyphosate product was concluded to be harmless to <i>Chrysoperla</i> and <i>Chrysoperla</i> eggs and pupae. The study was not conducted according to GLP and the study design lacks some details compared with relevant guidelines. The test concentrations are based on nominal values and no analytical verification of test item concentrations was conducted. Although the test design is described in quite some detail, some important information is missing, i.e. regarding the source and content of the applied products, the application of test item and control data are not shown for all parameters. Additionally, according to IOBC/WPRC larval stages should be exposed. As the study is based on a glyphosate product, the toxicity of glyphosate active substance alone is unknown and therefore endpoints generated from this study are not quantifiable and deliver only supplementary information.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
417	CA 8.3	Leccia F. et al.	2016	Disruption of the chemical communication of the European agrobiont groundaX80X90dwelling spider Pardosa agrestis by pesticides	Journal of applied entomology (2016), Vol. 140, No. 8, pp. 609	5.4.1 case b) Relevant but supplementary information: Endpoints based on the impact of chemicals on spider pheromones are not used/required in EU level ecotoxicological risk assessments.
509	CA 8.3	Pasini R. A. et al.	2018	Comparative selectivity of herbicides used in wheat crop on the predators Chrysoperla externa and Eriopis connexa	Planta Daninha (2018), Vol. 36, pp. E018179968	5.4.1 case b) Relevant but supplementary information: In the material and methods section important information is missing. The test items were not adequately specified regarding the content of the active ingredient. It is unclear whether the given active ingredient concentration in the spray solution corresponds to the content of the active ingredient in the formulation. The test did not follow a specific test guideline, although the culturing of the insects was conducted according to recognised approaches. There were no validity criteria established and the performance of the assays was not assessed using a positive control substance. An endpoint that could be used in an ecotoxicology risk assessment was not established.
559	CA 8.3	Saska P. et al.	2016	Treatment by glyphosate-based herbicide alters life history parameters of the rose-grain aphid Metopolophium dirhodum.	Scientific reports (2016), Vol. 6, pp. 27801	5.4.1 case b) Relevant but supplementary information: The paper does not present endpoints that could be used in an EU level ecotox risk assessment.
589	CA 8.3	Stecca C. S. et al.	2016	Side-Effects of Glyphosate to the Parasitoid Telenomus remus Nixon (Hymenoptera: Platygasteridae).	Neotropical entomology (2016), Vol. 45, No. 2, pp. 192	5.4.1 case b) Relevant but supplementary information: The study was conducted in accordance with the protocols proposed by IOBC. Exposure via overspray on egg-cards and parasitoid pupae does not correspond to an adequate route of exposure according to current guidelines for testing non-target arthropods. The test design for the bioassay where adults are exposed to dry residues moderately described. The mortality of parasitoids during exposure is unclear, however, the spray deposit is given. The assessment of the biological endpoints in not precisely reported; day of emergence of parasitoids is not given. As the biological data do not report results in values useful for the risk assessment, there is no analytical verification, and the study is non GLP, the study can be considered as supplementary only.
596	CA 8.3	Tahir H. M. et al.	2019	Effect of Pesticides on Biological Control Potential of Neoscona theisi (Araneae: Araneidae)	JOURNAL OF INSECT SCIENCE (2019), Vol. 19, No. 2, pp. 1	5.4.1 case b) Relevant but supplementary information: Considered supplemental as the approach used does not follow an approach recognised at EU level for use in risk assessment.
316	CA 8.3.1	Fagundez G. A. et al.	2016	Do agrochemicals used during soybean flowering affect the visits of Apis mellifera L.?	Spanish Journal of Agricultural Research (2016), Vol. 14, No. 1, p. e0301	5.4.1 case b) Relevant but supplementary information: Field level investigation where soybean are sprayed with glyphosate and the behaviour of bees is assessed. Findings not directly relateable to EU level risk assessment, as OTT crop application not on GAP - the observed effects are potentially useful for the discussion on indirect effects.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
430	CA 8.3.1	Liao L-H. et al.	2017	Behavioral responses of honey bees (<i>Apis mellifera</i>) to natural and synthetic xenobiotics in food.	Scientific reports (2017), Vol. 7, No. 1, pp. 15924	5.4.1 case b) Relevant but supplementary information: Presented data based on preference behaviour of honey bees cannot be directly related to an EU level ecotoxicological risk assessment - may possibly be used to support a lack of effects despite evidence being based upon preference.
609	CA 8.3.1	Tome H. V. V. et al.	2020	Frequently encountered pesticides can cause multiple disorders in developing worker honey bees.	Environmental pollution (2020), Vol. 256, pp. 113420	5.4.1 case b) Relevant but supplementary information: The data presented are relevant to the wider discussion of the effects of glyphosate on pollinators, but as the rates established for glyphosate used in the study were based on reported levels found in pollen and wax from another active substance, from an exposure perspective, they cannot be related to glyphosate.
620	CA 8.3.1	Vazquez D. E. et al.	2018	Glyphosate affects the larval development of honey bees depending on the susceptibility of colonies	PLoS One (2018), Vol. 13, No. 10, pp. E0205074	5.4.1 case b) Relevant but supplementary information: Endpoints presented are considered supplemental as the method of exposure used for the bees were not described.
279	CA 8.3.1, CP 10.3.1	Dai P. et al.	2018	The Herbicide Glyphosate Negatively Affects Midgut Bacterial Communities and Survival of Honey Bee during Larvae Reared in Vitro.	Journal of agricultural and food chemistry (2018), Vol. 66, No. 29, pp. 7786	5.4.1 case b) Relevant but supplementary information: The bacterial communities in the mid-gut of bees were characterised. No gut bacterial analysis was conducted on the positive control bees. Overall an increase in abundance and richness of bacterial taxa was observed at the highest exposure concentration. The implications of this was not discussed in the paper. Bacterial assemblages in the gut of honey bees is not related to an EU level ecotoxicology risk assessment. The study is adequately described including specifications of the test item and test design. However, no regulatory endpoints were derived and there is no analytical verification of dose solutions.
216	CA 8.3.1.4, CP 10.3.1.4	Balbuena M. S. et al.	2015	Effects of sublethal doses of glyphosate on honeybee navigation.	The Journal of experimental biology (2015), Vol. 218, No. 17, pp. 2799	5.4.1 case b) Relevant but supplementary information: Due to the foraging nature of bees in the natural environment described in this study, the effects cannot be solely attributed to glyphosate active substance. However, the impact of bees from other substances foraging during the homing flight is considered negligible as they were exposed to the test substance for 1 hour prior to release. It is a possibility and the data generated using this new experimental design, should be considered with a degree of caution. Furthermore, there is no clear indication of the dose of glyphosate that the bees were exposed to as there was no analytical verification conducted in the study. This is a new experimental design and does not provide relevant endpoints for the regulatory risk assessment of glyphosate Annex I renewal purposes. As there is no test guideline to which this study can be compared and as there is no data requirement nor approach to evaluate the findings of such a study at the regulatory level, the findings of this study should be considered with a degree of caution. The reliability assessment highlights that elements of the study may be considered reliable, but as there are no validity criteria against which this study can be assessed, nor data requirements relating to the achieved endpoints for Annex I renewal of plant

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
						protection products, the study must be considered non relevant for EU Annex I renewal purposes from an ecotoxicology risk assessment perspective.
257	CA 8.3.2, CP 10.3.2	Castilhos R. V. et al.	2011	Selectivity of pesticides used in peach orchard on adults of Chrysoperla externa (Hagen, 1861) (Neuroptera: Chrysopidae). Original title: Seletividade de agrotóxicos utilizados em pomares de pessego a adultos do predador Chrysoperla externa (Hagen, 1861) (Neuroptera: Chrysopidae).	Revista Brasileira de Fruticultura (2011), Vol. 33, No. 1, pp. 73	5.4.1 case b) Relevant but supplementary information: Roundup (and many other pesticides) were used as the test substance. Only mortality of lacewing were assessed. Likewise no reproduction endpoints were evaluated and thus no data is relevant to the risk assessment.
438	CA 8.3.2, CP 10.3.2	Lu Li-li et al.	2010	Effects of glyphosate on the growth and development of Agasicles hygrophila	Huanan Nongye Daxue Xuebao (2010), Vol. 31, pp. 22	5.4.1 case b) Relevant but supplementary information: The test substance is 41% glyphosate IPA salt. The study on Agasicles hygrophila was not conducted or based on a relevant NTA guideline.
531	CA 8.3.2, CP 10.3.2	Rainio M. J. et al.	2019	Effects of a glyphosate-based herbicide on survival and oxidative status of a non-target herbivore, the Colorado potato beetle (Leptinotarsa decemlineata)	Comparative biochemistry and physiology. Toxicology & pharmacology (2019), Vol. 215, pp. 47	5.4.1 case b) Relevant but supplementary information: The material and methods section lacks some important information. Newly hatched larvae from field collected beetles were used, however information on previous exposure to other chemicals or field history was not documented. Information on replicates, loading per replicate and test conditions were not reported. The preparation of the test solution was not specified. The test approach used does not follow a recognised test guideline and the rationale for the route of exposure and the dosing volumes used, is not described. The author indicates that a 100% Roundup Bio exposure in nature is unlikely to occur and that the high concentration mainly tests the physiological limits of the system including the antioxidant enzyme capacity of the beetles against the product. Exposure levels where significant effects were observed are unrealistic highlighting. There was no analytical verification, and the study was not performed according to GLP. Furthermore, endpoints based on biochemical analyses of larval homogenates cannot be applied in regulatory risk ecotoxicology assessment of non-target arthropods. Given the unrealistically high exposure levels used in the study, the non-guideline approach and the uncertainties as identified above, the study is considered as supplementary only.
651	CA 8.3.2, CP 10.3.2	You W-y. et al.	2010	Toxicity Evaluation of Sixteen Herbicides to Bombyx mori.	Asian Journal of Ecotoxicology (2010), Vol. 5, No. 1, pp. 91	5.4.1 case b) Relevant but supplementary information: Effects on silkworm via exposure of treated leaves. However, the application method is not specified. The amount of test solution per leaf, the consumed diet per silkworm and the number of organisms per replicate is unclear. Also no control results are available. Therefore the biological results can not be used for risk assessment.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
662	CA 8.3.2, CP 10.3.2	Zhang Q. et al.	2011	An evaluation on acute toxicity of 29 pesticides to <i>Bombyx mori</i>	Canye Kexue (2011), Vol. 37, No. 2, pp. 343	5.4.1 case b) Relevant but supplementary information: Effects of glyphosate (95% TC) on silkworms by using the leaf dipping method: 5 g mulberry leaves were evenly immersed in 10 mL test solution for 10s. However, no useful concentration can be derived. No control results available.
556	CA 8.4, CP 10.4.2.2	Santos M. J. G. et al.	2012	Pesticide application to agricultural fields: effects on the reproduction and avoidance behaviour of <i>Folsomia candida</i> and <i>Eisenia andrei</i> .	Ecotoxicology (2012), Vol. 21, No. 8, pp. 2113	5.4.1 case b) Relevant but supplementary information: The study is well described and performed according to ISO guidelines. Validity criteria were met, where relevant. Glyphosate did not seem to affect either earthworms or collembolans at the recommended field dose; therefore there were no endpoints presented in the paper, thus the study is considered supplementary only.
305	CA 8.4.1	Dominguez A. et al.	2016	Toxicity of AMPA to the earthworm <i>Eisenia andrei</i> Bouche, 1972 in tropical artificial soil.	Scientific reports (2016), Vol. 6, pp. 19731	5.4.1 case b) Relevant but supplementary information: The study is well-documented and performed according to ISO guideline 11268-1 and 11268-2. However, the artificial soil used is not classed as representative in the EU. Soil characteristics are only partly given as information on CEC, organic carbon content and bulk density are missing. Additionally, one of the validity criteria for the chronic test was not met (the reported minimum number of control juveniles is too low). Endpoints (NOEC, LC50) were not derived and therefore this study delivers only supplementary information.
345	CA 8.4.1	Hackenberger Davorka K. et al.	2018	Acute and subchronic effects of three herbicides on biomarkers and reproduction in earthworm <i>Dendrobaena veneta</i> .	Chemosphere (2018), Vol. 208, pp. 722	5.4.1 case b) Relevant but supplementary information: The chronic test was performed according to OECD 222. However, the study was not conducted to GLP. Information on validity criteria are missing, and there is not analytical verification of soil concentrations. The unexpectedly high number of cocoons and the low number of juveniles being produced in the control group at the end of the study suggests that the quality of the earthworms going into the study may have been low. According to OECD 222, by the end of the test, the number of juveniles produced per adult worm should be > 30. In this case, with six adult worms per replicate there was a mean production (juveniles per worm) of 2.67 worms per adult. It is also understood that the OECD 222 test guideline uses a different species (<i>Eisenia fetida</i>) and not <i>Dendrobaena veneta</i> . It is relevant to consider juvenile production in the control as a check on the test system robustness. This cannot be confirmed in this case. Therefore, the study can be considered acceptable as supplementary information.
367	CA 8.4.1	Jarmul-Pietraszczyk J. et al.	2012	Herbicide toxicity to the California earthworms <i>Eisenia fetida</i> Sav. and <i>Dendrobaena veneta</i> Rosa	Ecological Chemistry and Engineering A (2012), Vol. 19, No. 9, pp. 1133	5.4.1 case b) Relevant but supplementary information: This study compared the toxicity of three different commercially available formulations on the reproduction of earthworms, among them a glyphosate containing product (Glifocyd 360 SL). Further detail on active substance content, source and storage conditions were not provided. The study was not conducted according to a recognized test guideline nor under GLP. The origin of the earthworm species and their environmental holding conditions prior to and during the

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
						study have not been included. Information on the test soil characteristics is also missing and application of the test item to the soil is not described in detail. Sublethal and reproductive parameters of the control were reported, but information about control mortality is missing. In the chronic test only one single test item concentration was tested, with this information for the acute study missing. The endpoint generated from this study is given in mg/L and it is not clear how it can be transferred to soil concentrations as the bulk density in the test system is unknown and the statistical analysis is not provided in detail. Therefore, the endpoint presented is considered unreliable.
520	CA 8.4.1	Pochron S. et al.	2020	Glyphosate but not Roundup® harms earthworms (<i>Eisenia fetida</i>).	Chemosphere (2020), Vol. 241, pp. 125017	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP. The test design does not correspond to a current test guideline for earthworms focusing on reproduction parameters and there is no endpoint for risk assessment. Only a single dose level was used in the test, which is equivalent to 19.7 kg/ha; substantially higher than the maximum proposed application rate of glyphosate for the renewal. There was no analytical confirmation of levels tested, so exposure cannot be confirmed.
555	CA 8.4.1	Santadino M. et al.	2014	Glyphosate Sublethal Effects on the Population Dynamics of the Earthworm <i>Eisenia fetida</i> (Savigny, 1826)	Water, air, and soil pollution (2014), Vol. 225, No. 12, pp. 2207	5.4.1 case b) Relevant but supplementary information: The chronic laboratory study with <i>E. fetida</i> was not performed according to a recommended guideline and thus, no validity criteria were given. Insufficient information is provided on the experimental design, as no information on the soil characteristics and the application of the test item is given. Only two test item treatment rates, without giving any rationale for choosing the higher dose, and a negative control were tested, but no positive control. No information on underlying raw data is given, i.e. number of control mortality, number of juveniles and cocoons etc. Finally, there are no quantifiable endpoints presented in the paper, considered applicable to an EU level ecotoxicological risk assessment for renewal purposes.
590	CA 8.4.1	Stellin F. et al.	2017	Effects of different concentrations of glyphosate (Roundup 360A®) on earthworms (<i>Octodrilus complanatus</i> , <i>Lumbricus terrestris</i> and <i>Aporrectodea caliginosa</i>) in vineyards in the North-East of Italy	Applied soil ecology (2018), Vol. 123, pp 802	5.4.1 case b) Relevant but supplementary information: The study has not been conducted according to a recognized test guideline and there are no validity criteria presented. There is no information on the choice of test duration and the experimental design is not sufficiently described. A formulation was tested, but no information is given on the set-up of the spray solution, how application was carried out and at which volume. For the soil sampling, the time point of sampling is not stated and no information on storage conditions of the soil prior to use in the study is given. Additionally, information on the soil depth in the experimental test containers is not mentioned. Similarly no information on food and environmental conditions during the exposure period (e.g. temperature, soil

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
274	CA 8.4.2	Correia F. V. et al.	2010	Effects of glyphosate and 2,4-D on earthworms (<i>Eisenia foetida</i>) in laboratory tests.	Bulletin of environmental contamination and toxicology (2010), Vol. 85, No. 3, pp. 264	moisture, light conditions) are available. Finally, there are no quantifiable endpoints presented in the paper. 5.4.1 case b) Relevant but supplementary information: Study looks at the impact of glyphosate on earthworm reproduction. Conducted to relevant guidelines. Technical glyphosate used, Brazilian soils used. Test concentrations from 1 to 1000 mg/kg in a 56 day study. Data is useful but there is no reliable endpoint to be used in the regulatory risk assessment of glyphosate renewal.
308	CA 8.4.2	Druart C. et al.	2010	Towards the development of an embryotoxicity bioassay with terrestrial snails: screening approach for cadmium and pesticides.	Journal of hazardous materials (2010), Vol. 184, No. 1-3, pp. 26	5.4.1 case b) Relevant but supplementary information: Glyphosate a.i., glyphosate products and other products used to compare toxicity to land snails. LC50 generated. But new method described not to any established guideline.
325	CA 8.4.2	Garcia-Torres T. et al.	2014	Exposure assessment to glyphosate of two species of annelids.	Bulletin of environmental contamination and toxicology (2014), Vol. 93, No. 2, pp. 209	5.4.1 case b) Relevant but supplementary information: Information may be used to support the lack of effects in earthworm studies.
481	CA 8.4.2	Nevius B. A. et al.	2012	Surface-functionalization effects on uptake of fluorescent polystyrene nanoparticles by model biofilms.	Ecotoxicology (2012), Vol. 21, No. 8, pp. 2205	5.4.1 case b) Relevant but supplementary information: This paper discusses the results of an earthworm avoidance study which is not an endpoint type used in EU level risk assessment for Annex I renewal. Therefore it is considered to be supplementary. No effects were observed for glyphosate exposure.
544	CA 8.4.2	Rose M. T. et al.	2018	Minor effects of herbicides on microbial activity in agricultural soils are detected by N-transformation but not enzyme activity assays	European journal of soil biology (2018), Vol. 87, pp. 72	5.4.1 case b) Relevant but supplementary information: Non-EU soil but relevant endpoints demonstrating a lack of effects on soil microbial populations (n-trans) at field application rates.
615	CA 8.4.2	Ulu T. C. et al.	2016	Effects of different pesticides on virulence and mortality of some entomopathogenic nematodes.	ISI-Invertebrate Survival Journal (2016), Vol. 13, pp. 111	5.4.1 case b) Relevant but supplementary information: Nematode mortality and effects on virulence are not endpoints used in EU level ecotox risk assessment for the renewal.
230	CA 8.5	Bortoli P. V. et al.	2012	Effects of glyphosate on microbial community structure and activity in two soils under olive plantations. Original Title: Efectos del herbicida glifosato sobre la estructura y el funcionamiento de comunidades microbianas de dos suelos de plantaciones de olivo.	Ecologia Austral (2012), Vol. 22, No. 1, pp. 33	5.4.1 case b) Relevant but supplementary information: Paper presents information on the effects of glyphosate on respiration but the approaches used do not result in endpoints that can be used in an EU level risk assessment as they are based on Argentinian soils.
479	CA 8.5	Nathan V. K. et al.	2020	Pesticide application inhibit the microbial carbonic anhydrase-mediated carbon sequestration in a soil microcosm.	Environmental science and pollution research international (2020), Vol. 27, pp. 4468	5.4.1 case b) Relevant but supplementary information: Endpoints presented are not relevant to the direct effects assessment required for Annex I renewal. However, it does inform in other areas, e.g biodiversity / benefits of glyphosate use.
484	CA 8.5	Nunez S. et al.	2015	In vitro effect of N-(phosphonomethyl) glycine agrochemicals on total heterotrophic bacteria and azotobacter chroococcum.	Biocell (2015), Vol. 39, Suppl. 1. Abstract No.: A71.	5.4.1 case b) Relevant but supplementary information: Endpoints based on the effects of glyphosate on bacteria in soil are not considered in the EU level ecotox risk assessment for Annex I renewal.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
554	CA 8.5	Samal S. et al.	2019	Evaluating the effect of monocrotophos and glyphosate on microbial population and certain important exoenzyme activities in soil.	Journal of Environmental Biology (2019), Vol. 40, No. 2, pp. 226	5.4.1 case b) Relevant but supplementary information: Dosing information / purity of both active substances cannot be confirmed. Study not conducted according to a recognised guideline. Presented endpoints not relateable to an EU level risk assessment based on lack of soil characterisation.
594	CA 8.5	Sun Q. et al.	2012	Effects of typical herbicides on soil respiration and N ₂ O emissions from soil added with different nitrogen fertilizers.	Huan jing ke xue= Huanjing kexue (2012), Vol. 33, No. 6, pp. 1994	5.4.1 case b) Relevant but supplementary information: The study uses soil from fields in China, without describing the history of the fields (e.g. prior pesticide and fertilizer use), soil sampling, and soil storage conditions prior to the start of the experiment. Soil characteristics are unclear as no information on e.g. CEC and water holding capacity is available. The study was not conducted to a relevant guideline and thus no validity criteria are available. A negative control was included, but no information on replicates is available and only one test item concentration was tested. No positive control was tested. Application of the test item is not described well, the active substance content of the test item is not given and no verification of applied test amount was performed. Finally, there is no quantifiable endpoint presented.
187	CA 8.6	Aguilar-Dorantes K. et al.	2015	Glyphosate Susceptibility of Different Life Stages of Three Fern Species	American fern journal (2015), Vol. 105, No. 3, pp. 131	5.4.1 case b) Relevant but supplementary information: Considered supplementary as species not relateable to an EU level risk assessment for Annex I renewal.
195	CA 8.6	Allison J. E. et al.	2013	Influence of soil organic matter on the sensitivity of selected wild and crop species to common herbicides.	Ecotoxicology (2013), Vol. 22, No. 8, pp. 1289	5.4.1 case b) Relevant but supplementary information: Soils with a modified nutrient status were used which is not a requirement for the studies conducted to support the renewal in the EU.
219	CA 8.6	Barriuso J. et al.	2011	Effect of the herbicide glyphosate on the culturable fraction of glyphosate-tolerant maize rhizobacterial communities using two different growth media.	Microbes and environments (2011), Vol. 26, No. 4, pp. 332	5.4.1 case b) Relevant but supplementary information: The study was a comparison between glyphosate and Harness GTZ (pre-emergence herbicide), glyphosate (Roundup plus) was applied at appropriate concentrations (360 g/kg, 0.72 kg/ha), the study looked at the rhizobacterial communities of glyphosate tolerant maize. The study was not to any relevant guideline and did not provide an endpoint relevant to the renewal of glyphosate.
232	CA 8.6	Bott S. et al.	2011	Phytotoxicity of glyphosate soil residues re-mobilised by phosphate fertilisation	Plant and soil (2011), Vol. 342, No. 1-2, pp. 249	5.4.1 case b) Relevant but supplementary information: Roundup ultra max (360 g/L, applied up to 4.8 mg ae/kg soil), study looked at the impact of phosphate and glyphosate competition in the soil and subsequent availability of NTTP and impact on soil characteristics (in different soil types) to soybean growth. AMPA is also considered in the article. However, a regulatory endpoint suitable for the renewal of glyphosate was not obtained from the article.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
255	CA 8.6	Carvalho L. B. et al.	2016	Plant Growth Responses of Apple and Pear Trees to Doses of Glyphosate	Planta Daninha (2016), Vol. 34, No. 4, pp. 815	5.4.1 case b) Relevant but supplementary information: Study investigates the impact of spraying apple and pear saplings at rates up to 720 g/ha and assesses effects on yield. Spraying of sapling trees directly is not on the GAP table as a use, so whilst they may inform on the potential risk via drift, endpoint considered relevant to EU level risk assessment. The endpoints were not established using a test guideline considered relevant to EU renewal.
271	CA 8.6	Claassens A. et al.	2019	Soilborne glyphosate residue thresholds for wheat seedling metabolite profiles and fungal root endophyte colonisation are lower than for biomass production in a sandy soil.	Plant and Soil (2019), Vol. 438, No. 1/2, pp. 393	5.4.1 case b) Relevant but supplementary information: Presented information on effects of glyphosate on seedling emergence and soil fungi, but no specific endpoints are presented that could be used for the renewal ecotoxicological risk assessment.
354	CA 8.6	Helander M. et al.	2019	Glyphosate residues in soil affect crop plant germination and growth.	Scientific reports (2019), Vol. 9, No. 1, pp. 19653	5.4.1 case b) Relevant but supplementary information: The study presents endpoints that may be considered relevant to a risk assessment, however, the test design does not reflect the seedling emergence study required as part of the data requirements.
385	CA 8.6	Kennedy E. et al.	2012	Herbicide Phragmites australis: effects on litter decomposition, microbial biomass, and macroinvertebrate communities.	Fundamental and Applied Limnology (2012), Vol. 180, No. 4, pp. 309	5.4.1 case b) Relevant but supplementary information: This paper provides information that is considered relevant to the biodiversity.
433	CA 8.6	Lin JingWen et al.	2015	Toxic effect of glyphosate on seed germination and seedling growth of Chinese fir.	Acta Agriculturae Universitatis Jiangxiensis (2015), Vol. 37, No. 5, pp. 843	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP, but it is well documented although no relevant guidelines have been followed. The authors state that the seed germination rate as well as the root length, stem length, leaf length and fresh weight of seedlings decreased significantly with the increase of glyphosate and the root length was more sensitive to glyphosate than other indexes. It was concluded that there is an inhibitory effect of glyphosate on Chinese fir seeds and seedlings, which led to antioxidant enzyme dysfunction, oxidative damage of cells and reduced chlorophyll synthesis. No analytical verification of the test item concentrations was performed, and the findings do not generate endpoints relevant to the regulatory risk assessment of glyphosate.
500	CA 8.6	Panettieri M. et al.	2013	Glyphosate effect on soil biochemical properties under conservation tillage	Soil & tillage research (2013), Vol. 133, pp. 16	5.4.1 case b) Relevant but supplementary information: The paper describes different tillage techniques following use of glyphosate and the impact on soil properties. Not relateable directly to risk assessment for renewal but may be useful in the biodiversity and benefits discussions.
516	CA 8.6	Piotrowicz-Cieslak A. I. et al.	2010	Different Glyphosate Phytotoxicity of Seeds and Seedlings of Selected Plant Species.	Polish Journal of Environmental Studies (2010), Vol. 19, No. 1, pp. 123	5.4.1 case b) Relevant but supplementary information: Study to compare the effect of glyphosate on plant growth parameters of 6 plant species.

No	Data requirement (indicated by the corresponding CA/CP data point number)	Author(s)	Year	Title	Source	Justification
562	CA 8.6	Schwan-Stoffel A. V. et al.	2012	The effect of herbicides on the germination of urediniospores of <i>Phakopsora pachyrhizi</i> SYD & P. SYD. Original Title: Germinacao de <i>Phakopsora pachyrhizi</i> SID. & P. SID. Sob diferentes herbicidas.	Arquivos do Instituto Biologico Sao Paulo (2012), Vol. 79, No. 3, pp. 381	5.4.1 case b) Relevant but supplementary information: Study describes the impacts of glyphosate on germination of plant pathogen spores.
259	CA 8.6.2	Cavusoglu K. et al.	2011	Investigation of toxic effects of the glyphosate on <i>Allium cepa</i> .	Tarim Bilimleri Dergisi (2011), Vol. 17, No. 2, pp. 131	5.4.1 case b) Relevant but supplementary information: Glyphosate products were used in the study. Impact on seed germination and root growth.
365	CA 8.6.2	Jain S. et al.	2012	Herbicidal action on germination, amylase activity and gibberellin level in <i>Cajanus cajan</i> (L.).	Bioscience Discovery Journal (2012), Vol. 3, No. 2, pp. 232	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP and the test substance source and identity could not be verified. The study has not been conducted according to a recognized test guideline and there are no validity criteria presented. The authors state that glyphosate affects the level of gibberellin and amylase activity, as well as causing the food reserve content of seedlings to decrease gradually with increase in concentration. However, given the lack of standard guidelines, unclear experimental design and approach, test substance and dose rates not sufficiently being reported as well as challenges in interpreting the study results, make reaching any reliable conclusions from the study quite challenging.
552	CA 8.6.2	Salgado T. P. et al.	2011	Initial symptoms of <i>Eucalyptus</i> intoxication by glyphosate rates applied on the stem or leaves. Sintomas da intoxicação inicial de <i>Eucalyptus</i> proporcionados por subdoses de glyphosate aplicadas no caule ou nas folhas.	Planta Daninha (2011), Vol. 29, No. 4, pp. 913	5.4.1 case b) Relevant but supplementary information: Effects on eucalyptus seedlings after application of glyphosate (Roundup Original, 360 g a.e./L). Spraying the aerial part of the plants (trials 3 and 4), Plant BBCH stage unclear (height at start of application: 40/69 cm). No biological results for control or any test concentration reported in tables. Therefore the results cannot be reproduced. No results in values which can be used for the risk assessment.
612	CA 8.6.2	Truta E. et al.	2011	Evaluation of Roundup-induced toxicity on genetic material and on length growth of barley seedlings.	Acta biologica Hungarica (2011), Vol. 62, No. 3, pp. 290	5.4.1 case b) Relevant but supplementary information: Impact of glyphosate product on barley seedling development. Unclear how endpoint could be used in risk assessment.
280	CA 8.7	Damgaard C. et al.	2014	The effect of glyphosate on the growth and competitive effect of perennial grass species in semi-natural grasslands.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2014), Vol. 49, No. 12, pp. 897	5.4.1 case b) Relevant but supplementary information: Not directly relevant to Ecotox risk assessment, but maybe used in biodiversity discussion.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
309	CA 8.7	Druart C. et al.	2011	Glyphosate and glufosinate-based herbicides: fate in soil, transfer to, and effects on land snails	Journal of soils and sediments (2011), Vol. 11, No. 8, pp. 1373	5.4.1 case b) Relevant but supplementary information: The material and methods part lack some important information. The test design for the exposure of snails to treated food is not specified and thus the intake dose per snail is unclear. Furthermore, the application of the test solutions into the soil is not reported and an even distribution cannot be confirmed. Nevertheless a chemical analysis of the soil during exposure was performed. As the biological data does not report results as an endpoint useful for the risk assessment, the study is not done to a guideline and is non-GLP and can be considered as supplementary only.
313	CA 8.7	Emmanuel L. D. A. et al.	2015	Effect of glyphosate on <i>Bacillus megaterium</i> with reference to tea ecosystem.	International Journal of Tea Science (2015), Vol. 11, No. 3/4, pp. 16	5.4.1 case b) Relevant but supplementary information: Endpoints are not releatable to an EU ecotox risk assessment, but may inform on discussions over community level effects in soil.
364	CA 8.7	Jacques M. T. et al.	2019	Reprotoxicity of glyphosate-based formulation in <i>Caenorhabditis elegans</i> is not due to the active ingredient only.	Environmental pollution (2019), Vol. 252, No. Pt B, pp. 1854	5.4.1 case b) Relevant but supplementary information: The toxicity of glyphosate (glyphosate in monoisopropylamine salt) and its commercial formulation Temifin - Dexter Latina to the nematode <i>Caenorhabditis elegans</i> was investigated. Reproductive capacity was evaluated by means of brood size. The material and methods section lack some important information. The preparation of the test solutions and application of the test item are not described. Test concentrations, controls and loading per replicate are not specified and therefore not verifiable. Description of exposure throughout the study is also missing. The formulation used is not the representative formulation for the renewal. Furthermore, no useful endpoint for the regulatory risk assessment of terrestrial organisms can be derived.
533	CA 8.7	Ranganathaswamy M. et al.	2012	Evaluation of toxicity of agrochemicals on <i>Trichoderma</i> isolates in vitro.	Journal of Biological Control (2012), Vol. 26, No. 4, pp. 391	5.4.1 case b) Relevant but supplementary information: The form of glyphosate used in the experiments cannot be confirmed. Fungal growth inhibition is not part of the specific ecotox risk assessment for the renewal.
297	CA 8.9	Dennis P. G. et al.	2018	The effects of glyphosate, glufosinate, paraquat and paraquat-diquat on soil microbial activity and bacterial, archaeal and nematode diversity	Scientific Reports (2018), Vol. 8, pp. 1	5.4.1 case b) Relevant but supplementary information: Nematode abundance is not an endpoint used in Ecotox risk assessment. However, these data are considered relevant to soil community effects based on single applications. Article is considered supplementary, as the approach used is not a recognised approach for ecotox risk assessment.
528	CA 8.9	Rahman F. et al.	2019	Evaluation of Glyphosate Levels in Sediments of Milky Stork Foraging Areas in Kuala Gula Bird Sanctuary, Perak, Malaysia.	Pertanika Journal of Tropical Agricultural Science (2019), Vol. 42, No. 3, pp. 995	5.4.1 case b) Relevant but supplementary information: Considered relevant but supplemental as this relates to biodiversity irrespective of not deriving from an EU country.

No	Data requirement (indicated by the corresponding CA/ CP data point number)	Author(s)	Year	Title	Source	Justification
570	CP 10.3.2	Siddhapara M. R. et al.	2012	Toxicity of some commonly used insecticides/herbicides on Zygothema bicolorata Pallister (Coleoptera: Chrysomelidae).	Journal of Biological Control (2012), Vol. 26, No. 3, pp. 251	5.4.1 case b) Relevant but supplementary information: The source of the beetles used was not adequately described. The source and purity of the glyphosate test substance was not described, preventing confirmation of the exposure concentrations used in the test. There was insufficient description of the test system to enable comparison with existing test guidelines to establish acceptability of the approach used. Analytical verification of the exposure concentrations was not performed. No endpoint can be derived from the study. The study is considered as supplementary only.

Table 35: Relevant but supplementary (category B) articles after detailed assessment: sorted by author(s)

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
180	Abdulkareem S. I. et al.	CA 8.2.8	2015	Histopathological effects of lethal and sub-lethal concentrations of glyphosate on gills and liver of African catfish, <i>Clarias gariepinus</i> .	Journal of Aquatic Sciences (2015), Vol. 30, No. 1, pp. 53	5.4.1 case b) Relevant but supplementary information: Although blood, gill and liver enzyme levels are not relatable to an EU level ecotoxicological risk assessment for Annex I renewal purposes, the study was considering acute effects and chronic sublethal effects on fish following exposure to glyphosate. The study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The environmental holding conditions (water quality) for the fish prior to and during the study were not included. The fish loading rate (g/fish L) was 20.5 g fish/L, which far exceeds the loading rate required for chronic static renewal fish tests. The typical loading rates for studies submitted to support regulatory submission for Annex I renewals in the EU are 0.8 to 1.0 g fish/L. The impact of such high fish densities cannot be established, as no water quality measurements were included in the paper, such as the dissolved oxygen levels (mgO ₂ /L) and pH values. There was no test substance information presented, glyphosate concentrations were not measured / confirmed during the 28 day study duration. Behavioural observations in test vessels could not be related to the nominal exposure concentration. Finally, there were no quantifiable endpoints presented in the paper, considered applicable to an EU level ecotoxicological risk assessment for renewal purposes.
181	Abdulkareem S. I. et al.	CA 8.2.8	2013	Effects of sub-lethal concentrations of glyphosate on behaviour and some biochemical parameters of African catfish (<i>Clarias gariepinus</i>)	Proceedings of the 28th annual conference of the Fisheries Society of Nigeria (2013), pp. 188	5.4.1 case b) Relevant but supplementary information: Although blood, gill and liver enzyme levels are not relatable to an EU level ecotoxicological risk assessment the renewal purposes, the study was considered as supplemental due to the sublethal effects on fish behaviour following exposure to glyphosate. The study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The fish species and their origin are not described and environmental conditions (water quality) for the fish prior to and during the study have not been included. The fish loading rate (g/fish L test medium) was 20.5 g fish/L, which far exceeds the loading rate required for chronic static renewal fish tests typically required for studies submitted to support regulatory submission for renewals in the EU (0.8 to 1.0 g fish/L). The impact of such high fish densities cannot be established, as no water quality measurements were provided such as levels of dissolved oxygen (mgO ₂ /L) and pH. Similarly, there was no test substance information or rationale presented for the selection of exposure concentrations. glyphosate concentrations were also not measured / confirmed during the 28 day study duration. Behavioural observations relating to the swimming activity are not relatable to the nominal exposure

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						concentration. Finally, there are no applicable EU level ecotoxicological risk assessment quantifiable endpoints presented in the paper.
182	Abou-Amer W. L. et al.	CA 5.6	2010	Teratological effects induced by three pesticides in pregnant rats	Alexandria Journal of Pharmaceutical Sciences (2010), Vol. 24, No. 1, pp. 21	5.4.1 case b) Relevant but supplementary information: Supportive only: Study is done with pesticide formulations with only one dose per pesticide treatment group established. The study contains insufficient data, therefore supplementary only.
183	Acquavella J. et al.	CA 5.5	2018	Corrigendum to: Glyphosate epidemiology expert panel review: a weight of evidence systematic review of the relationship between glyphosate exposure and non-Hodgkin's lymphoma or multiple myeloma.	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp. 898	5.4.1 case b) Relevant but supplementary information: Corrigendum to Acquavella et al. 2016, Critical Reviews in Toxicology (2016), Vol. 46, sup1, pp. 28-43.
184	Acquavella J. et al.	CA 5.9.4	2016	Glyphosate epidemiology expert panel review: a weight of evidence systematic review of the relationship between glyphosate exposure and non-Hodgkin's lymphoma or multiple myeloma.	Critical reviews in toxicology (2016), Vol. 46, No. sup1, pp. 28	5.4.1 case b) Relevant but supplementary information: review, secondary source.
185	Adams R. D. et al.	CA 5.9.5	2013	The NPIS Pesticide Surveillance Project - Eye contact with pesticides: Circumstances of exposure and toxicity.	Clinical Toxicology (2013), Vol. 51, No. 4, pp. 353	5.4.1 case b) Relevant but supplementary information: This is a report describing ocular exposures to pesticides. Formulated glyphosate is expected to cause moderate conjunctivitis & irritation when the eye is exposed due to the surfactant. This should not impact re-registration.
186	Agbon A. O. I. et al.	CA 8.2.8	2014	The potential impact of Glyphosate on captured fisheries productivity and sustainability	Proceedings of the 29th annual conference of the Fisheries Society of Nigeria (2014), pp. 17	5.4.1 case b) Relevant but supplementary information: The study was not conducted according to a recognised acute test guideline and there are no validity criteria presented. The overall study duration was 35 days, from which a 96 hr LC50 value was determined. There are no data presented in the paper in terms of mortalities over the first 4 days from which a 96 hr LC50 could be determined. The fish also appear to have been fed for the 35 day duration, which is not in accordance with the recognised acute fish toxicity test guideline used according to the EU No. 283 2013 data requirements. The environmental holding conditions (water quality) for the fish prior to and during the study were not included. The fish loading rate (g/fish L) cannot be determined as no test vessel water volumes are presented. There are no water quality measurements included in the paper, such as the dissolved oxygen levels (mgO2/L) and pH values. There was no test substance information presented, glyphosate concentrations were not measured / confirmed during the 35 day study duration. No sub-lethal behavioural observations were included in the paper. Finally, the presented endpoints cannot be confirmed from the presented information in the paper. The study is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
187	Aguilar-Dorantes K. et al.	CA 8.6	2015	Glyphosate Susceptibility of Different Life Stages of Three Fern Species	American fern journal (2015), Vol. 105, No. 3, pp. 131	5.4.1 case b) Relevant but supplementary information: Considered supplementary as species not relateable to an EU level risk assessment for Annex I renewal.
188	Ahmed A. A. et al.	CA 7.1.3.1.1	2018	Unravelling the nature of glyphosate binding to goethite surfaces by ab initio molecular dynamics simulations.	Physical chemistry chemical physics (2018), Vol. 20, No. 3, pp. 1531	5.4.1 case b) Relevant but supplementary information: Explores possible binding mechanisms for glyphosate with three goethite surface planes (010, 001, and 100) in the presence of water.
334	Ait Bali Y. et al.	CA 5.8	2017	Behavioral and Immunohistochemical Study of the Effects of Subchronic and Chronic Exposure to Glyphosate in Mice.	Frontiers in behavioral neuroscience (2017), Vol. 11, pp. 146	Supplementary and not directly relevant to EU risk assessment.
190	Alexa E. et al.	CA 7.1.2.1.1	2010	Research on the weed control degree and glyphosate soil biodegradation in apple plantations (Pioneer variety).	Analele Universitatii din Oradea, Fascicula Biologie (2010), Vol. 17, No. 1, pp. 5	5.4.1 case b) Relevant but supplementary information: Only glyphosate mineralization analyzed (measurement of 14CO ₂), no details on soil characteristics or experimental set-up reported.
191	Alhewairini S. S.	CA 8.2.4	2017	Toxicity of the herbicide glyphosate to non-target species <i>Caenorhabditis elegans</i> .	Journal of Food, Agriculture & Environment (2017), Vol. 15, No. 2, pp. 97	5.4.1 case b) Relevant but supplementary information: The study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The generated endpoints are not based on direct effects on the nematode, but instead, are based on the optical density related to the density of bacteria present in the NGM agar test cultures. It is unclear if the presented mortality data were due to direct effects of glyphosate in the cultures, or due to indirect effects associated with reduced feeding activity. There was no test substance information presented and glyphosate concentrations were not measured / confirmed during the study. Finally, there were no quantifiable endpoints presented in the paper, that would be considered applicable to an EU level ecotoxicological risk assessment.
192	Alishahi M. et al.	CA 8.2.1	2019	Comparative toxicities of five herbicides on nauplii of <i>Artemia franciscana</i> as an ecotoxicity bioindicator.	IRANIAN JOURNAL OF FISHERIES SCIENCES (2019), Vol. 18, No. 4, pp. 716	5.4.1 case b) Relevant but supplementary information: The material and methods section lack some important information. OECD standard methods were mentioned in the publication; however, the test guideline or specific validity criteria were not specified. Furthermore, information on preparation, application of the test item or exposure conditions are missing. No results for the control group are available to put the biological effects in context. Also no mortality results for all treatment group are given. At the end of the test, an endpoint was derived, but further statistical information (assessment of statistical power, confidence intervals) are not stated. Furthermore, there was no analytical verification of test concentrations reported. The study is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
193	Alishahi M. et al.	CA 8.2.1	2016	Acute toxicity evaluation of five herbicides: paraquat, 2,4-dichlorophenoxy acetic acid (2,4-D), trifluralin, glyphosate and atrazine in <i>Luciobarbus esocinus</i> fingerlings.	Iranian Journal of Veterinary Medicine (2016), Vol. 10, No. 4, pp. 319	5.4.1 case b) Relevant but supplementary information: Although the study was stated to have been conducted according to a recognised test guideline (OECD 203), no validity criteria was presented. The selected fish species and their approximate origin are described but environmental holding conditions (water quality) for the fish handling prior to and during the study were not included. There was limited test substance information presented, with no rationale presented for the selection of exposure concentrations. glyphosate concentrations were also not measured/confirmed during the evaluation period. Behavioural observations relating to the lethargy and swimming behaviour are not considered directly related to the nominal exposure concentration. The study is considered unreliable.
194	Alleva R. et al.	CA 5.8.2	2018	Mechanism underlying the effect of long-term exposure to low dose of pesticides on DNA integrity.	Environmental Toxicology (2018), Vol. 33, No. 4, pp. 476	5.4.1 case b) Relevant but supplementary information: Purity and source not reported. No positive control. Only one or two concentrations of glyphosate were tested. Comparisons are to untreated cells rather than negative controls. The reliability of the study is unassignable.
195	Allison J. E. et al.	CA 8.6	2013	Influence of soil organic matter on the sensitivity of selected wild and crop species to common herbicides.	Ecotoxicology (2013), Vol. 22, No. 8, pp. 1289	5.4.1 case b) Relevant but supplementary information: Soils with a modified nutrient status were used which is not a requirement for the studies conducted to support the renewal in the EU.
196	Alvarez-Moya C. et al.	CA 5.4	2014	Comparison of the in vivo and in vitro genotoxicity of glyphosate isopropylamine salt in three different organisms.	Genetics and molecular biology (2014), Vol. 37, No. 1, pp. 105	5.4.1 case b) Relevant but supplementary information: Mechanistic study without clear relevance for the risk assessment.
197	Amaral M. J. et al.	CA 8.1.4	2012	The use of a lacertid lizard as a model for reptile ecotoxicology studies - Part 1 Field demographics and morphology	Chemosphere (2012), Vol. 87, No. 7, pp. 757	5.4.1 case b) Relevant but supplementary information: This study reports results from a long term population monitoring study. The endpoints are such that it difficult to relate to an ecotox risk assessment for Annex I renewal purposes, but is supportive from a population level perspective.
198	Andreotti G. et al.	CA 5.8.2	2012	The interaction between pesticide use and genetic variants involved in lipid metabolism on prostate cancer risk	Journal of Cancer Epidemiology (2012), Article ID 358076, pp 1	5.4.1 case b) Relevant but supplementary information: Mechanism of measuring toxicity is not data requirement of (EC) 1107/2009; performed in a non-relevant test model.
199	Anifandis G. et al.	CA 5.8.2	2018	The effect of glyphosate on human sperm motility and sperm DNA fragmentation	International Journal of Environmental Research and Public Health (2018), Vol. 15, No. 6, pp. 1117/1	5.4.1 case b) Relevant but supplementary information: The glyphosate used is not characterized, only one test concentration was used, no positive control was considered and the results obtained are not corroborated by in vivo regulatory reproductive toxicology studies with much higher systemic levels of glyphosate. This publication is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
200	Anon.	CA 5.5	2018	Expression of Concern (26 September 2018): An Independent Review of the Carcinogenic Potential of Glyphosate.	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp. 981	5.4.1 case b) Relevant but supplementary information: Expression of concern regarding articles Williams et al. 2016, Crit Rev Toxicol (2016), 46(S1):3-20 and Solomon et al. 2016, Crit Rev Toxicol (2016), 46(S1):21-27 and Acquavella et al. 2016, Crit Rev Toxicol (2016), 46(S1):28-43 and Williams et al. 2016, Crit Rev Toxicol (2016), 46(S1):44-55; and Brusick et al. 2016, Crit Rev Toxicol (2016), 46(S1):56-74.
201	Aris A.	CA 5.9.1	2012	Response to comments from Monsanto scientists on our study showing detection of glyphosate and Cry1Ab in blood of women with and without pregnancy	Reproductive Toxicology (2012), Vol. 33, No. 1, pp. 122	5.4.1 case b) Relevant but supplementary information: Correspondence with no new data.
202	Arjo G. et al.	CA 5.5	2013	Plurality of opinion, scientific discourse and pseudoscience: an in depth analysis of the Seralini et al. study claiming that Roundup® Ready corn or the herbicide Roundup® cause cancer in rats.	Transgenic research (2013), Vol. 22, No. 2, pp. 255	5.4.1 case b) Relevant but supplementary information: Discussion providing context to a controversial retracted publication.
203	Armbruster D. et al.	CA 7.5	2019	Characterization of phosphonate-based antiscalants used in drinking water treatment plants by anion-exchange chromatography coupled to electrospray ionization time-of-flight mass spectrometry and inductively coupled plasma mass spectrometry.	Journal of chromatography A (2019), Vol. 1601, pp. 189	5.4.1 case b) Relevant but supplementary information: Article is primarily about identification of impurities in anti-sealing products used in drinking water treatment. AMPA is identified as being present in some antiscalants at concentrations from 1.9 to 157 mg/L after 10,000 fold dilution of the commercial antiscalants. Information may be used qualitatively but not directly for EU risk assessments.
204	Arroyave J. M. et al.	CA 7.1.3.1.1	2016	Effect of humic acid on the adsorption/desorption behavior of glyphosate on goethite. Isotherms and kinetics.	Chemosphere (2016), Vol. 145, pp. 34	5.4.1 case b) Relevant but supplementary information: Study of effects of humic acid (HA) on the adsorption/desorption of glyphosate (glyphosate) on goethite. Not related to efate guideline, but supplemental information on glyphosate sorption.
205	Ascolani Y. J. et al.	CA 7.2.1	2014	Abiotic degradation of glyphosate into aminomethylphosphonic acid in the presence of metals.	Journal of agricultural and food chemistry (2014), Vol. 62, No. 40, pp. 9651	5.4.1 case b) Relevant but supplementary information: The paper is about abiotic degradation of glyphosate into AMPA in the presence of metals but it does not change the risk assessment.
206	Aslam S. et al.	CA 7.1.4	2018	Mulch of plant residues at the soil surface impact the leaching and persistence of pesticides: A modelling study from soil columns.	Journal of contaminant hydrology (2018), Vol. 214, pp. 54	5.4.1 case b) Relevant but supplementary information: Model developed to predict glyphosate degradation / movement in presence of mulch. Not an EU validated model. Experimental data used to test the model were from a previous paper.
207	Aslam S. et al.	CA 7.5	2015	Effect of rainfall regimes and mulch decomposition on the dissipation and leaching of S-metolachlor and glyphosate: a soil column experiment.	Pest management science (2015), Vol. 71, No. 2, pp. 278	5.4.1 case b) Relevant but supplementary information: The study describes a soil column leaching tests with glyphosate in French soils. Glyphosate recovery from the soil column at Day 0 was only 52%. This recovery is not acceptable to draw further conclusions from the study. This publication is considered unreliable.
208	Avgerinou C. et al.	CA 5.9.4	2017	Occupational, dietary, and other risk factors for myelodysplastic syndromes in Western Greece.	Hematology (2017), Vol. 22, No. 7, pp. 419	5.4.1 case b) Relevant but supplementary information: A case-control study with non-blind interviewers results in both potential recall bias and interviewer bias. This publication is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
209	Avigliano L. et al.	CA 8.2.4	2014	Effects of glyphosate on growth rate, metabolic rate and energy reserves of early juvenile crayfish, <i>Cherax quadricarinatus</i> M.	Bulletin of environmental contamination and toxicology (2014), Vol. 92, No. 6, pp. 631	5.4.1 case b) Relevant but supplementary information: Enzymatic Mortality and survival data not discussed in paper.
210	Avila-Vazquez M. et al.	CA 5.9.4	2015	Cancer and detrimental reproductive effects in an Argentine agricultural community environmentally exposed to glyphosate. Original Title: Cancer y trastornos reproductivos en una poblacion agricola argentina expuesta a glifosato.	Journal of Biological Physics and Chemistry (2015), Vol. 15, No. 3, pp. 97	5.4.1 case b) Relevant but supplementary information: There is no glyphosate use associations quantified, confounded by multiple pesticide uses, other local industry and local sanitation questions.
211	Ayanda O. I. et al.	CA 8.2.1	2015	Acute toxicity of glyphosate and paraquat to the African catfish (<i>Clarias gariepinus</i> , Teugels 1986) using some biochemical indicators	Tropical zoology (2015), Vol. 28, No. 4, pp. 152	5.4.1 case b) Relevant but supplementary information: The test items were not identified, therefore it is not clear what was actually tested and to which compound the effects / results can be assigned.
212	Babalola O. O. et al.	CA 8.1.4	2018	Comparative Early Life Stage Toxicity of the African Clawed Frog, <i>Xenopus laevis</i> Following Exposure to Selected Herbicide Formulations Applied to Eradicate Alien Plants in South Africa.	Archives of Environmental Contamination and Toxicology (2018), Vol. 75, No. 1, pp. 8	5.4.1 case b) Relevant but supplementary information: As the composition of the Roundup used in the test cannot be confirmed, the study must be considered as being supplementary. Original roundup contains a POEA surfactant which drives the toxicity of the product.
213	Bach N. C. et al.	CA 8.1.4	2016	Effect on the growth and development and induction of abnormalities by a glyphosate commercial formulation and its active ingredient during two developmental stages of the South-American Creole frog, <i>Leptodactylus latrans</i> .	Environmental science and pollution research international (2016), Vol. 23, No. 23, pp. 23959	5.4.1 case b) Relevant but supplementary information: Endpoint data presented for a formulated product other than the representative formulation for the Annex I. There are data indicated for glyphosate technical material, but this material is not identified in the materials and methods.
214	Baglan H. et al.	CA 8.3	2018	Glyphosate impairs learning in <i>Aedes aegypti</i> mosquito larvae at field-realistic doses.	The Journal of experimental biology (2018), Vol. 221, No. 20, pp 1	5.4.1 case b) Relevant but supplementary information: Information presented on the learning behaviour of mosquito larvae exposed to glyphosate. These data are difficult to relate to an EU level ecotox risk assessment for the renewal.
215	Baier C. J. et al.	CA 5.8	2017	Behavioral impairments following repeated intranasal glyphosate-based herbicide administration in mice.	Neurotoxicology and teratology (2017), Vol. 64, pp. 63	5.4.1 case b) Relevant but supplementary information: Formulation tested via intranasal administration.
216	Balbuena M. S. et al.	CA 8.3.1.4, CP 10.3.1.4	2015	Effects of sublethal doses of glyphosate on honeybee navigation.	The Journal of experimental biology (2015), Vol. 218, No. 17, pp. 2799	5.4.1 case b) Relevant but supplementary information: Due to the foraging nature of bees in the natural environment described in this study, the effects cannot be solely attributed to glyphosate active substance. However, the impact of bees from other substances foraging during the homing flight is considered negligible as they were exposed to the test substance for 1 hour prior to release. It is a possibility and the data generated using this new experimental design, should be considered with a degree of caution. Furthermore, there is no clear indication of the dose of glyphosate that the bees were exposed to as there was no analytical verification conducted in the study. This is a new experimental design and does not provide

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						relevant endpoints for the regulatory risk assessment of glyphosate Annex I renewal purposes. As there is no test guideline to which this study can be compared and as there is no data requirement nor approach to evaluate the findings of such a study at the regulatory level, the findings of this study should be considered with a degree of caution. The reliability assessment highlights that elements of the study may be considered reliable, but as there are no validity criteria against which this study can be assessed, nor data requirements relating to the achieved endpoints for Annex I renewal of plant protection products, the study must be considered non relevant for EU Annex I renewal purposes from an ecotoxicology risk assessment perspective.
217	Bando H. et al.	CA 5.9	2010	Extreme hyperkalemia in a patient with a new glyphosate potassium herbicide poisoning: report of a case.	The Japanese journal of toxicology (2010), Vol. 23, No. 3, pp. 246	5.4.1 case b) Relevant but supplementary information: This case report describes severe hyperkalemia in the setting of suicidal ingestion of potassium salt glyphosate formulations. This is not unexpected.
218	Bara J. J. et al.	CA 8.3	2014	Sublethal effects of atrazine and glyphosate on life history traits of <i>Aedes aegypti</i> and <i>Aedes albopictus</i> (Diptera: Culicidae).	Parasitology research (2014), Vol. 113, No. 8, pp. 2879	5.4.1 case b) Relevant but supplementary information: The test provides information on the impact of glyphosate on mosquito development, but the test design employed is not a recognised approach used for Annex I data generation for renewal purposes. Test item purity not stated, only pestanol grade. No chemical analysis.
219	Barriuso J. et al.	CA 8.6	2011	Effect of the herbicide glyphosate on the culturable fraction of glyphosate-tolerant maize rhizobacterial communities using two different growth media.	Microbes and environments (2011), Vol. 26, No. 4, pp. 332	5.4.1 case b) Relevant but supplementary information: The study was a comparison between glyphosate and Harness GTZ (pre-emergence herbicide), glyphosate (Roundup plus) was applied at appropriate concentrations (360 g/kl, 0.72 kg/ha), the study looked at the rhizobacterial communities of glyphosate tolerant maize. The study was not to any relevant guideline and did not provide an endpoint relevant to the renewal of glyphosate.
220	Bashir S. et al.	CA 5.5	2012	Final review of the Seralini et al. (2012a) publication on a 2-year rodent feeding study with glyphosate formulations and GM maize NK603 as published online on 19 September 2012 in Food and Chemical Toxicology	EFSA Journal (2012), Vol. 10, No. 11, pp. 2986	5.4.1 case b) Relevant but supplementary information: EFSA review of Seralini chronic rat study.
221	Bashir S. et al.	CA 5.5	2012	Review of the Seralini et al. (2012) publication on a 2-year rodent feeding study with glyphosate formulations and GM maize NK603 as published online on 19 September 2012 in Food and Chemical Toxicology	EFSA Journal (2012), Vol. 10, No. 10, pp. 2910	5.4.1 case b) Relevant but supplementary information: EFSA review of Seralini chronic rat study.
222	Beard J. D. et al.	CA 5.9.4	2014	Pesticide exposure and depression among male private pesticide applicators in the agricultural health study.	Environmental Health Perspectives (2014), Vol. 122, No. 9, pp. 984	5.4.1 case b) Relevant but supplementary information: No statistically significant findings for glyphosate.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
223	Beard J. D. et al.	CA 5.9.4	2013	Pesticide exposure and self-reported incident depression among wives in the Agricultural Health Study	Environmental Research (2013), Vol. 126, pp. 31	5.4.1 case b) Relevant but supplementary information: No statistically significant findings for glyphosate.
224	Belle R. et al.	CA 5.6	2012	Letter to the Editor: Toxicity of Roundup and glyphosate.	Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 4, pp. 233	5.4.1 case b) Relevant but supplementary information: Response to Letter to the Editor, comments on Williams et al. 2012, J. Toxicol. Environ. Health B Crit. Rev (2012), Vol. 15, No. 1, pp. 39-96.
225	Bento C. P. M. et al.	CA 7.1.2.1.1, CA 7.1.2.1.4	2016	Persistence of glyphosate and aminomethylphosphonic acid in loess soil under different combinations of temperature, soil moisture and light/darkness.	The Science of the total environment (2016), Vol. 572, pp. 301	5.4.1 case b) Relevant but supplementary information: Supplementary information on the rate of degradation of glyphosate and rate of formation/dissipation of AMPA in loess soil as a function of temperature, soil moisture and light/darkness.
226	Berry C.	CA 5.5	2018	The complexities of regulatory toxicology	Outlooks on Pest Management (2018), Vol. 29, No. 6, pp. 270	5.4.1 case b) Relevant but supplementary information: No new data presented.
227	Berry C.	CA 5.5	2013	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 430	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012 Food Chemical Toxicol. (2012), retracted
228	Beswick E. et al.	CA 5.9	2011	Fatal poisoning with glyphosate-surfactant herbicide.	Journal of the Intensive Care Society (2011), Vol. 12, No. 1, pp. 37	5.4.1 case b) Relevant but supplementary information: This is a case of a young man who deliberately ingested glyphosate product at home and rapidly developed multi-organ failure, culminating in death. No new observations.
229	Boonsoong B. et al.	CA 8.2.4.1, CP 10.2.1	2012	Acute toxicity of Roundup and carbosulfan to the Thai fairy shrimp, <i>Branchinella thailandensis</i> .	Communications in agricultural and applied biological sciences (2012), Vol. 77, No. 4, pp. 431	5.4.1 case b) Relevant but supplementary information: The study was not conducted according to a recognised test guideline and no validity criteria are presented for control group performance, so the robustness of the assay can not be concluded. In the materials and methods, there is insufficient information presented on the test medium preparation approach and on the environmental conditions used in the test. There was no chemical analysis and therefore exposure cannot be confirmed. There are insufficient explanations provided on the experimental design, particularly environmental condition and conduct during the test. The study is considered unreliable.
230	Bortoli P. V. et al.	CA 8.5	2012	Effects of glyphosate on microbial community structure and activity in two soils under olive plantations. Original Title: Efectos del herbicida glifosato sobre la estructura y el funcionamiento de comunidades microbianas de dos suelos de plantaciones de olivo.	Ecologia Austral (2012), Vol. 22, No. 1, pp. 33	5.4.1 case b) Relevant but supplementary information: Paper presents information on the effects of glyphosate on respiration but the approaches used do not result in endpoints that can be used in an EU level risk assessment as they are based on Argentinian soils.
231	Bosak A. B. et al.	CA 5.9.5	2014	Clinical presentations with different glyphosate-containing herbicides.	Journal of Medical Toxicology (2014), Vol. 10, No. 1, pp. 72	5.4.1 case b) Relevant but supplementary information: This is a report about multi-organ failure after suicidal ingestion of formulated glyphosate and should not impact re-registration.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
232	Bott S. et al.	CA 8.6	2011	Phytotoxicity of glyphosate soil residues re-mobilised by phosphate fertilisation	Plant and soil (2011), Vol. 342, No. 1-2, pp. 249	5.4.1 case b) Relevant but supplementary information: Roundup ultra max (360 g/L, applied up to 4.8 mg a.e/kg soil), study looked at the impact of phosphate and glyphosate competition in the soil and subsequent availability of NTP and impact on soil characteristics (in different soil types) to soybean growth. AMPA is also considered in the article. However, a regulatory endpoint suitable for the renewal of glyphosate was not obtained from the article.
233	Boye K. et al.	CA 7.5	2019	Long-term data from the Swedish national environmental monitoring program of pesticides in surface waters	Journal of Environmental Quality (2019), Vol. 48, pp. 1109	5.4.1 case b) Relevant but supplementary information: Describes pesticide analysis data and pesticide use information available for 4 small watersheds in Sweden. Data is available elsewhere but article provides a description of methodology and sources for data.
234	Braun C. et al.	CA 7.5	2013	The load from rail wastewater. Emissions of micropollutants from rail traffic into the watershed	Aqua & Gas (2013), Vol. 93, No. 7/8, pp. 40	5.4.1 case b) Relevant but supplementary information: No new glyphosate water concentrations are presented. Using worst-case measured values, glyphosate concentrations are predicted in various size flowing water bodies.
235	Brennan J. C. et al.	CA 5.8.3	2016	Development of a recombinant human ovarian (BG1) cell line containing estrogen receptor α and β for improved detection of estrogenic/antiestrogenic chemicals	Environmental Toxicology and Chemistry (2016), Vol. 35, No. 1, pp. 91	5.4.1 case b) Relevant but supplementary information: Limited data on glyphosate.
236	Brock A. L. et al.	CA 7.2.2.3	2019	Microbial Turnover of Glyphosate to Biomass: Utilization as Nutrient Source and Formation of AMPA and Biogenic NER in an OECD 308 Test.	Environmental science & technology (2019), Vol. 53, No. 10, pp. 5838	5.4.1 case b) Relevant but supplementary information: Uses data from another study (Wang, 2016) to test model to predict glyphosate mineralisation, degradation, and incorporation into non-extractable residues. Not directly relevant to EU risk assessment.
237	Brunetti R. et al.	CA 5.9.5	2019	Electrocardiographic abnormalities associated with acute glyphosate toxicity.	HeartRhythm Case Rep. (2020), Vol. 6, pp. 63	5.4.1 case b) Relevant but supplementary information: This article claims that dermal exposure to a small amount of glyphosate led to cardiac arrhythmia and claims that the patient developed a Brugada syndrome & long QT syndrome after exposure. The measured QTc in a wide-complex tracing is uninterpretable. Brugada syndrome is largely due to sodium channel block in cardiac myocytes, LQT syndrome is largely due to potassium channel block in the cardiac myocytes. Glyphosate does neither. Moreover, glyphosate is not dermally absorbed and multiple GLP studies have shown that glyphosate is not cardiotoxic.
238	Brusick D. et al.	CA 5.4	2016	Genotoxicity Expert Panel review: weight of evidence evaluation of the genotoxicity of glyphosate, glyphosate-based formulations, and aminomethylphosphonic acid.	Critical reviews in toxicology (2016), Vol. 46, No. sup1, pp. 56	5.4.1 case b) Relevant but supplementary information: review, secondary source.
239	Brusick D. et al.	CA 5.5	2018	Corrigendum to: Genotoxicity Expert Panel review: weight of evidence evaluation of the genotoxicity of glyphosate, glyphosate-based formulations, and aminomethylphosphonic acid.	Critical Reviews in Toxicology (2018), Vol. 46, No. 10, pp. 902	5.4.1 case b) Relevant but supplementary information: Corrigendum to Brusick et al. 2016, Critical Reviews in Toxicology (2016), Vol. 46, sup1, pp. 56-74

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
240	Burstyn I. et al.	CA 5.5	2017	Visualizing the heterogeneity of effects in the analysis of associations of multiple myeloma with glyphosate use: comments on sorahan, t. multiple myeloma and glyphosate use: A re-analysis of us agricultural health study (AHS) data.	International Journal of Environmental Research and Public Health (2017), Vol. 14, No. 1, pp. 1	5.4.1 case b) Relevant but supplementary information: Re-analysis of old data, no statistically significant glyphosate findings. A re-analysis of US agricultural health study (AHS) data. Int. J. Environ. Res. Public Health (2015), Vol. 12, pp. 1548
241	Bus J. S.	CA 5.5	2017	IARC use of oxidative stress as key mode of action characteristic for facilitating cancer classification: Glyphosate case example illustrating a lack of robustness in interpretative implementation.	Regulatory toxicology and pharmacology (2017), Vol. 86, pp. 157	5.4.1 case b) Relevant but supplementary information: review, secondary source.
242	Bus J. S.	CA 5.9.2	2015	Analysis of Moms Across America report suggesting bioaccumulation of glyphosate in U.S. mother's breast milk: Implausibility based on inconsistency with available body of glyphosate animal toxicokinetic, human biomonitoring, and physico-chemical data.	Regulatory toxicology and pharmacology (2015), Vol. 73, No. 3, pp. 758	5.4.1 case b) Relevant but supplementary information: review, secondary source.
243	Caballero M. et al.	CA 5.9.4	2018	Estimated Residential Exposure to Agricultural Chemicals and Premature Mortality by Parkinson's Disease in Washington State.	International journal of environmental research and public health (2018), Vol. 15, No. 12, pp. 1	5.4.1 case b) Relevant but supplementary information: Unproven exposure. Uncertain temporal relationship between purported exposure and the health outcome. Appropriate design would evaluate exposure or non-exposure from Parkinson's diagnosis and compare length of survival by exposure category.
244	Caganova B. et al.	CA 5.9.5	2017	Caustic effects of chemicals: risk factors for complications and mortality in acute poisoning	Monatsshefte fuer Chemie (2017), Vol. 148, No. 3, pp. 497	5.4.1 case b) Relevant but supplementary information: This article discusses caustic injury in suicide attempts and therefore should not impact registration decisions.
245	Caganova B. et al.	CA 5.9.5	2017	Caustic ingestion in the elderly: influence of age on clinical outcome	Molecules (2017), Vol. 22, No. 10, pp. 1726/1	5.4.1 case b) Relevant but supplementary information: This article compares outcomes of caustic ingestions in young to elderly patients and it demonstrates that there is a higher mortality in the older group. Glyphosate is mentioned in a table where there were 9 ingestions with no fatalities in the younger group and 2 fatalities in the elderly. This article discusses suicidal ingestions of caustic substances and should therefore not impact re-registration.
246	Cai W. et al.	CA 5.6	2017	Effects of glyphosate exposure on sperm concentration in rodents: A systematic review and meta-analysis.	Environmental toxicology and pharmacology (2017), Vol. 55, pp. 148	5.4.1 case b) Relevant but supplementary information: Re-evaluation of pooled literature data.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
247	Cai W. et al.	CA 5.9.4	2020	Correlation between CYP1A1 polymorphisms and susceptibility to glyphosate-induced reduction of serum cholinesterase: A case-control study of a Chinese population.	Pesticide biochemistry and physiology (2020), Vol. 162, pp. 23	5.4.1 case b) Relevant but supplementary information: Untenable assumption for the genetic analyses: that ChE depression (viz., case status) is related to glyphosate. Note that ChE depression is not more likely among those with longest glyphosate employment tenure. Adequate description of study population is uncertain. Selection process not clearly described. Adequate description of exposure circumstances is uncertain. Description of workplaces lacking. Subjects could have worked primarily in producing raw materials. This publication is considered unreliable.
248	Caloni F. et al.	CA 5.8	2016	Suspected poisoning of domestic animals by pesticides.	The Science of the total environment (2016), Vol. 539, pp. 331	5.4.1 case b) Relevant but supplementary information: Review article on domestic animal poisonings by pesticides.
249	Campuzano C. et al.	CA 5.9.2	2017	Efectos de la intoxicación por glifosato en la población agrícola: revisión de tema	Revista CES Salud Pública (2017), Vol. 8, No. 1, pp. 121	5.4.1 case b) Relevant but supplementary information: This article claims that occupational exposure to glyphosate formulations is associated with multi-organ toxicity via suicidal ingestions and a literature review to support their claim. In suicide attempts, glyphosate based formulations are known to cause caustic injury leading to multi-organ failure. However, occupational exposures do not, nor do they lead to chronic long term effects. The Ag Health Study from 2005 & 2018 demonstrate no evidence of carcinogenicity. The Farm Family Exposure Study shows that there is minimal absorption of glyphosate in the occupational setting.
250	Carbajal-Lopez Y. et al.	CA 5.4	2016	Biomonitoring of agricultural workers exposed to pesticide mixtures in Guerrero state, Mexico, with comet assay and micronucleus test	Environmental Science and Pollution Research (2016), Vol. 23, No. 3, pp. 2513	5.4.1 case b) Relevant but supplementary information: No glyphosate specific conclusions, confounded due to multiple pesticide uses.
251	Carles L. et al.	CA 7.5	2019	Meta-analysis of glyphosate contamination in surface waters and dissipation by biofilms.	Environment international (2019), Vol. 124, pp. 284	5.4.1 case b) Relevant but supplementary information: High phosphorus concentrations in surface water can reduce complete glyphosate degradation by biofilms and favour the accumulation of AMPA in river water.
252	Carrasco A. E.	CA 8.1.5	2011	Reply to the letter to the editor regarding our article (Paganelli et al., 2010).	Chemical research in toxicology (2011), Vol. 24, No. 5, pp. 610	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Reply to Paganelli et al., 2010, Paganelli et al. Chem. Res. Toxicol (2010), Vol. 23, pp. 1586-1595.
253	Carretta L. et al.	CA 7.1.4	2019	A new rapid procedure for simultaneous determination of glyphosate and AMPA in water at sub µg/L level.	Journal of chromatography. A (2019), Vol. 1600, pp. 65	5.4.1 case b) Relevant but supplementary information: Analytical method. Analyzed runoff samples from the Po River Valley in Italy. Only ranges of values provided not individual values. Indicates glyphosate concentrations are lower in the presence of a buffer strip than without buffer strip.
254	Carroll R. et al.	CA 5.9.5	2012	Diurnal variation in probability of death following self-poisoning in Sri Lanka--evidence for chronotoxicity in humans.	International journal of epidemiology (2012), Vol. 41, No. 6, pp. 1821	5.4.1 case b) Relevant but supplementary information: This article discusses the concept of chronotoxicity in overdoses. They found no evidence of circadian effects on glyphosate overdoses. This article discusses suicidal ingestions and therefore should not impact registration decisions.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
255	Carvalho L. B. et al.	CA 8.6	2016	Plant Growth Responses of Apple and Pear Trees to Doses of Glyphosate	Planta Daninha (2016), Vol. 34, No. 4, pp. 815	5.4.1 case b) Relevant but supplementary information: Study investigates the impact of spraying apple and pear saplings at rates up to 720 g/ha and assesses effects on yield. Spraying of sapling trees directly is not on the GAP table as a use, so whilst they may inform on the potential risk via drift, endpoint considered relevant to EU level risk assessment. The endpoints were not established using a test guideline considered relevant to EU renewal.
256	Castilhos R. V. et al.	CA 8.3	2014	Selectivity of pesticides used in peach orchards on eggs and pupae of the predator <i>Chrysoperla externa</i> . Seletividade de agrotóxicos utilizados em pessegueiro sobre ovos e pupas do predador <i>Chrysoperla externa</i> .	Ciência Rural (2014), Vol. 44, No. 11, pp. 1921	5.4.1 case b) Relevant but supplementary information: The glyphosate product was concluded to be harmless to <i>Chrysoperla</i> and <i>Chrysoperla</i> eggs and pupae. The study was not conducted according to GLP and the study design lacks some details compared with relevant guidelines. The test concentrations are based on nominal values and no analytical verification of test item concentrations was conducted. Although the test design is described in quite some detail, some important information is missing, i.e. regarding the source and content of the applied products, the application of test item and control data are not shown for all parameters. Additionally, according to IOBC/WPRC larval stages should be exposed. As the study is based on a glyphosate product, the toxicity of glyphosate active substance alone is unknown and therefore endpoints generated from this study are not quantifiable and deliver only supplementary information.
257	Castilhos R. V. et al.	CA 8.3.2, CP 10.3.2	2011	Selectivity of pesticides used in peach orchard on adults of <i>Chrysoperla externa</i> (Hagen, 1861) (Neuroptera: Chrysopidae). Original title: Seletividade de agrotóxicos utilizados em pomares de pessego a adultos do predador <i>Chrysoperla externa</i> (Hagen, 1861) (Neuroptera: Chrysopidae).	Revista Brasileira de Fruticultura (2011), Vol. 33, No. 1, pp. 73	5.4.1 case b) Relevant but supplementary information: Roundup (and many other pesticides) were used as the test substance. Only mortality of lacewing were assessed. Likewise no reproduction endpoints were evaluated and thus no data is relevant to the risk assessment.
258	Cattaneo R. et al.	CA 8.2	2011	Toxicological responses of <i>Cyprinus carpio</i> exposed to a commercial formulation containing glyphosate.	Bulletin of environmental contamination and toxicology (2011), Vol. 87, No. 6, pp. 597	5.4.1 case b) Relevant but supplementary information: Roundup (480 g/L contains surfactant) used up to 10 mg/L with common carp to look at impact on AChE enzyme and physiological effects. Study described well but not conducted to a guideline and the endpoints can not be extrapolated for use in the renewal of glyphosate. Conducted outside EU.
259	Cavusoglu K. et al.	CA 8.6.2	2011	Investigation of toxic effects of the glyphosate on <i>Allium cepa</i> .	Tarım Bilimleri Dergisi (2011), Vol. 17, No. 2, pp. 131	5.4.1 case b) Relevant but supplementary information: Glyphosate products were used in the study. Impact on seed germination and root growth.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
260	Cebotari V. et al.	CA 6.10.1	2018	Content of pesticide residues in the flowers of the acacia and linden trees from the Moldavian Codri area.	Scientific Papers, Series D, Animal Science (2018), Vol. 61, No. 2, pp. 235	5.4.1 case b) Relevant but supplementary information: The publication is considered to only provide supplementary information that is not directly relevant to MRL setting and risk assessment. The residue levels found in linden flower would trigger the need for a honey residue study and cannot be used to directly estimate an MRL. The method used to determine the residues of glyphosate in flowers is not described in the publication and no validation data are provided.
261	Chan C-W. et al.	CA 5.9.5	2016	Successful Extracorporeal Life Support in a Case of Severe Glyphosate-Surfactant Intoxication.	Critical care medicine (2016), Vol. 44, No. 1, pp. E45	5.4.1 case b) Relevant but supplementary information: This paper looked at the use of ECMO in a critically ill patient after formulated glyphosate product overdose. ECMO is sometime of utility in treating overdose patients. This paper should not impact re-registration.
262	Chandrasekera W. U. et al.	CA 8.2.1, CP 10.2.1	2011	The lethal impacts of Roundup® (glyphosate) on the fingerlings of guppy, Poecilia reticulata Peters, 1859.	Asian Fisheries Science (2011), Vol. 24, No. 4, pp. 367	5.4.1 case b) Relevant but supplementary information: The material and methods lacks important information. The purity of the formulation is not presented. There is a narrative on water qualities / environmental conditions during the test, but there is no actual data presented to confirm the acceptability of the exposure / test conditions except for a value presented for dissolved oxygen levels. There was no analytical verification of test concentrations reported and therefore the level of exposure cannot be confirmed. The study is considered unreliable.
263	Chang E. T. et al.	CA 5.9.4	2016	Systematic review and meta-analysis of glyphosate exposure and risk of lymphohematopoietic cancers.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2016), Vol. 51, No. 6, pp. 402	5.4.1 case b) Relevant but supplementary information: The glyphosate meta-RRs took the results from the available studies at face value. The authors had no way to correct for recall bias, confounding, etc. Therefore, the meta-RRs are in error to the extent that the studies included in the meta-analysis are also in error. Chang and Delzell (2016) are clear on this point in their meta-analysis article. Accordingly glyphosate p-values and confidence intervals for the meta-RRs cannot be taken at face value because they incorporate systematic error or bias. Thus, the argument about the statistical significance/insignificance of the meta-RR for glyphosate is negated. One cannot calculate a valid p-value when there is uncontrolled systematic error (Greenland S. Randomization, statistics, and causal inference. Epidemiology 1990; 1:421-429).
264	Chau A. M. T. et al.	CA 5.9	2011	More Data on the Effect of Haemoperfusion for Acute Poisoning Is Required.	Blood Purification (2011), Vol. 31, No. 1-3, pp. 41	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Gil et al_2010, Blood Purif (2010), Vol. 30, No. 2, pp. 84-8.
265	Chen H-H. et al.	CA 5.9.5	2013	Spectrum of corrosive esophageal injury after intentional paraquat or glyphosate-surfactant herbicide ingestion.	International journal of general medicine (2013), Vol. 6, pp. 677	5.4.1 case b) Relevant but supplementary information: Ingestions of formulated glyphosate and paraquat are known to cause caustic injury which can result in respiratory and other complications. This paper should not impact the re-registration.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
266	Chiarello M. et al.	CA 6.5.3	2019	Fast analysis of glufosinate, glyphosate and its main metabolite, aminomethylphosphonic acid, in edible oils, by liquid chromatography coupled with electrospray tandem mass spectrometry.	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment (2019), Vol. 36, No. 9, pp. 1376	5.4.1 case b) Relevant but supplementary information: Residue analytical method. Olive oil is relevant to the uses considered for renewal in the EU. But only few real samples analysed and all showed residues < LOQ which can be predicted from the physical-chemical properties of glyphosate and AMPA.
267	Cho Y. et al.	CA 5.9.5	2019	Serial measurement of glyphosate blood concentration in a glyphosate potassium herbicide-intoxicated patient: A case report.	The American journal of emergency medicine (2019), Vol. 37, pp 160	5.4.1 case b) Relevant but supplementary information: Measurement of glyphosate blood concentration in an intoxicated patient, no unusual findings for such a case (suicide attempt).
268	Cho Y. S. et al.	CA 5.9.2	2018	The qSOFA Score: A Simple and Accurate Predictor of Outcome in Patients with Glyphosate Herbicide Poisoning.	Basic & clinical pharmacology & toxicology (2018), Vol. 123, No. 5, pp. 615	5.4.1 case b) Relevant but supplementary information: This study is describing the use of a scoring system to predict severity of outcome after patients present with a formulated glyphosate overdose. This is meant to guide clinical practice and should not impact re-registration.
269	Cho Y. S. et al.	CA 5.9.5	2019	Use of qSOFA Score in Predicting the Outcomes of Patients With Glyphosate Surfactant Herbicide Poisoning Immediately Upon Arrival at the Emergency Department.	Shock (Augusta, Ga.) (2019), Vol. 51, No. 4, pp. 447	5.4.1 case b) Relevant but supplementary information: This article describes a scoring system that is widely used in intensive care and used to determine the prognosis of patients with a variety of presenting complaints. It is descriptive and helps physicians decide whether a patient needs early ICU intervention. This article is describing a series of overdoses and should not impact re-registration
270	Choi B. et al.	CA 5.9.5	2013	Plasma lactate level may be an insufficient monitoring tool in critically ill patient: A case of ischemia modified albumin in acute glyphosate poisoning.	Toxicology Letters (2013), Vol. 221, Supp. 1, pp. S66	5.4.1 case b) Relevant but supplementary information: This is a report about measuring IMA rather than lactate as a marker of shock after suicidal ingestion of formulated glyphosate and should not impact re-registration.
271	Claassens A. et al.	CA 8.6	2019	Soilborne glyphosate residue thresholds for wheat seedling metabolite profiles and fungal root endophyte colonisation are lower than for biomass production in a sandy soil.	Plant and Soil (2019), Vol. 438, No. 1/2, pp. 393	5.4.1 case b) Relevant but supplementary information: Presented information on effects of glyphosate on seedling emergence and soil fungi, but no specific endpoints are presented that could be used for the renewal ecotoxicological risk assessment.
272	Conti C. L. et al.	CA 5.9.4	2018	Pesticide exposure, tobacco use, poor self-perceived health and presence of chronic disease are determinants of depressive symptoms among coffee growers from Southeast Brazil	Psychiatry Research (2018), Vol. 260, pp. 187	5.4.1 case b) Relevant but supplementary information: Study is fraught with limitations including very poor statistical analysis. Outcome and exposures essentially concurrent. This publication is considered unreliable.
273	Cordova Lopez A. M. et al.	CA 8.2.4	2019	Exposure to Roundup® affects behaviour, head regeneration and reproduction of the freshwater planarian Girardia tigrina	Science of the total environment (2019), Vol. 675, pp. 453	5.4.1 case b) Relevant but supplementary information: This is an invasive flatworm species in the EU. No specific test guidelines are available for this type of study, despite the range of endpoints that appear to have been covered.
274	Correia F. V. et al.	CA 8.4.2	2010	Effects of glyphosate and 2,4-D on earthworms (Eisenia fetida) in laboratory tests.	Bulletin of environmental contamination and toxicology (2010), Vol. 85, No. 3, pp. 264	5.4.1 case b) Relevant but supplementary information: Study looks at the impact of glyphosate on earthworm reproduction. Conducted to relevant guidelines. Technical glyphosate used, Brazilian soils used. Test concentrations from 1 to 1000 mg/kg in a 56 day study. Data is useful but there is no reliable endpoint to be used in the regulatory risk assessment of glyphosate renewal.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
275	Cothran R. D. et al.	CA 8.1.4	2013	Proximity to agriculture is correlated with pesticide tolerance: evidence for the evolution of amphibian resistance to modern pesticides.	Evolutionary Applications (2013), Vol. 6, No. 5, pp. 832	5.4.1 case b) Relevant but supplementary information: Endpoints or findings are not relevant at EU level ecotox risk assessment, but may be evidence / relevant to biodiversity discussions.
276	Cremonese C. et al.	CA 5.9.4	2017	Occupational exposure to pesticides, reproductive hormone levels and sperm quality in young Brazilian men	Reproductive Toxicology (2017), Vol. 67, pp. 174	5.4.1 case b) Relevant but supplementary information: Due to exposure/outcome temporal ambiguity and failure to control for other exposures in the evaluation of specific exposures. This publication is considered unreliable.
277	da Cruz C. et al.	CA 8.2.1	2016	Sensitivity, ecotoxicity and histopathological effects on neotropical fish exposed to glyphosate alone and associated to surfactant	Journal of Environmental Chemistry and Ecotoxicology (2016), Vol. 8, No. 3, pp. 25	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP and/or according to a recognized test guideline and there are no validity criteria presented. The authors state that glyphosate alone and in association with Aterbane® BR was classified as practically non-toxic, whereas Aterbane® BR alone was considered moderately toxic for the tested organisms. However, due to insufficient explanation of experimental set-up (e.g. test substance, test medium, statistical analysis) and lack of experimental standard procedures (e.g. analytical verification), the study is may be used only as supportive information.
278	Dabney B. L. et al.	CA 8.2.6	2018	Low-dose stimulation of growth of the harmful alga, <i>Prymnesium parvum</i> , by glyphosate and glyphosate-based herbicides.	Harmful algae (2018), Vol. 80, pp. 130	5.4.1 case b) Relevant but supplementary information: This paper does not present endpoints that can be used in the ecotox risk assessment for the renewal. The information are however considered supportive to discussions over hormesis.
279	Dai P. et al.	CA 8.3.1, CP 10.3.1	2018	The Herbicide Glyphosate Negatively Affects Midgut Bacterial Communities and Survival of Honey Bee during Larvae Reared in Vitro.	Journal of agricultural and food chemistry (2018), Vol. 66, No. 29, pp. 7786	5.4.1 case b) Relevant but supplementary information: The bacterial communities in the mid-gut of bees were characterised. No gut bacterial analysis was conducted on the positive control bees. Overall an increase in abundance and richness of bacterial taxa was observed at the highest exposure concentration. The implications of this was not discussed in the paper. Bacterial assemblages in the gut of honey bees is not relevant to an EU level ecotoxicology risk assessment. The study is adequately described including specifications of the test item and test design. However, no regulatory endpoints were derived and there is no analytical verification of dose solutions.
280	Damgaard C. et al.	CA 8.7	2014	The effect of glyphosate on the growth and competitive effect of perennial grass species in semi-natural grasslands.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2014), Vol. 49, No. 12, pp. 897	5.4.1 case b) Relevant but supplementary information: Not directly relevant to Ecotox risk assessment, but maybe used in biodiversity discussion.
281	Dang Q. et al.	CA 5.9.1	2011	Control Effect of Occupational Hazards in Construction Project of Glyphosate Production	Chinese Journal of Public Health Engineering (2011), Vol. 10, no. 2, pp. 111	5.4.1 case b) Relevant but supplementary information: This is a paper describing the evaluation of a glyphosate production facility and a description of how to mitigate risks of exposure to the chemistries involved in glyphosate production.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
282	de Almeida L. L. et al.	CA 5.6	2017	Effects of melatonin in rats in the initial third stage of pregnancy exposed to sub-lethal doses of herbicides.	Acta histochemica (2017), Vol. 119, No. 3, pp. 220	5.4.1 case b) Relevant but supplementary information: Formulation tested at high doses of 500 mg/kg bw/day (Roundup), therefore supplementary only.
283	de Araujo J. S A. et al.	CA 5.9.4	2016	Glyphosate and adverse pregnancy outcomes, a systematic review of observational studies.	BMC public health (2016), Vol. 16, pp. 472	5.4.1 case b) Relevant but supplementary information: review, secondary source.
284	de Avila R. I. et al.	CA 5.8	2017	In vitro assessment of skin sensitization, photosensitization and phototoxicity potential of commercial glyphosate-containing formulations.	Toxicology in vitro (2017), Vol. 45, No. 3, pp. 386	5.4.1 case b) Relevant but supplementary information: Non-validated model confirms glyphosate non-sensitized & non-photosensitizer. Formulation data inconsistent in non-validated model.
285	de Campos Oliveira R. et al.	CA 8.2.7	2016	Assessment of the potential toxicity of glyphosate-based herbicides on the photosynthesis of <i>Nitella microcarpa</i> var. <i>wrightii</i> (Charophyceae)	Phycologia (2016), Vol. 55, no. 5, pp. 577	5.4.1 case b) Relevant but supplementary information: Despite the study using a recognised OECD guideline, the endpoints in terms of respiration rates are not relevant to an EU level risk assessment for Annex I renewal, which specifically considers inhibition of glyphosate growth rates. The study considers technical glyphosate, Roundup and AMPA. Despite the technical material being identified, the formulation was not. It is not possible to conclude on the effects caused by the formulation as it was inferred that the product contains POEA.
286	de Castilhos Ghisi N. et al.	CA 5.4	2016	Does exposure to glyphosate lead to an increase in the micronuclei frequency? A systematic and meta-analytic review.	Chemosphere (2016), Vol. 145, pp. 42	5.4.1 case b) Relevant but supplementary information: No new data presented, only compilation of pooled glyphosate and formulated product meta-analyses.
287	De Geronimo E. et al.	CA 7.1.3.1.1	2018	Glyphosate sorption to soils of Argentina. Estimation of affinity coefficient by pedotransfer function	Geoderma (2018), Vol. 322, pp. 140	5.4.1 case b) Relevant but supplementary information: Reports most important parameters for glyphosate adsorption. Provides equation to predict Freundlich constant Kf. Useful qualitative information but not directly relevant for risk assessment.
288	de Jesus Veloso Castro A. et al.	CA 8.2.7	2015	Using a toxicity test with <i>Ruppia maritima</i> (Linnaeus) to assess the effects of Roundup.	Marine pollution bulletin (2015), Vol. 91, No. 2, pp. 506	5.4.1 case b) Relevant but supplementary information: This paper presents information on the effects of glyphosate on a saline tolerant species. However, there is no glyphosate exposure presented in the paper so it is very difficult to relate the observed effects to an exposure event / agricultural application.
289	De Raadt W. M. et al.	CA 5.9.5	2015	Acute eosinophilic pneumonia associated with glyphosate-surfactant exposure.	Sarcoidosis, vasculitis, and diffuse lung diseases : official journal of WASOG (2015), Vol. 32, No. 2, pp. 172	5.4.1 case b) Relevant but supplementary information: This article is a case report of a smoker who developed eosinophilic pneumonia after glyphosate exposure. Glyphosate is not a sensitizer as established by multiple GLP regulatory studies. Nozzle application of formulated glyphosate produces aerosols of between 200-350 microns. In humans, it takes droplets of <100 microns to cause inhalational injury. The claim that formulated glyphosate can cause inhalational injury in a setting where it isn't aspirated is not biologically plausible.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
290	Dechartres J. et al.	CA 5.8.2	2019	Glyphosate and glyphosate-based herbicide exposure during the peripartum period affects maternal brain plasticity, maternal behaviour and microbiome	Journal of Neuroendocrinology (2019), Vol. 31, pp. e12731	5.4.1 case b) Relevant but supplementary information: The glyphosate used was not sufficiently characterised, only one dose level was tested, the number of animals used per dose level was too low (n = 7) and a unreliable technique for oral dosing was employed (injection of test item in cookies). This publication is considered unreliable.
291	Dedeke G. A. et al.	CA 5.8.2	2018	Comparative Assessment on Mechanism Underlying Renal Toxicity of Commercial Formulation of Roundup Herbicide and Glyphosate Alone in Male Albino Rat.	International Journal of Toxicology (2018), Vol. 37, No. 4, pp. 285	5.4.1 case b) Relevant but supplementary information: The glyphosate used was not sufficiently characterized, the number of animals used per dose level was too low, and the conduct of the biochemical tests and the analysis of glyphosate in kidney tissue was poorly described. Moreover, the results from the testing of the oxidative stress parameters seem not reliable. This publication is considered unreliable.
292	Deepananda K. H. M. A. et al.	CA 8.2.4, CP 10.2.2	2011	Acute toxicity of a glyphosate herbicide, Roundup (R), to two freshwater crustaceans.	Journal of the National Science Foundation of Sri Lanka (2011), Vol. 39, No. 2, pp. 169	5.4.1 case b) Relevant but supplementary information: After exposure to Roundup® the 48 hour acute LC50 for adult copepod <i>Phyllocladonotus annae</i> was determined to be 1.059 mg/L. This endpoint is questionable as there was only 19% mortality at the highest exposure concentration in the test (1.6 mg/L). For the second species, the 72 and 96 hour LC50 for decapod shrimp <i>Cardina nilotica</i> was determined to be 107.53 and 60.97 mg/L, respectively. However, the mean percentage mortality at both timepoints was identical from Table 1 in the paper. As there are no biological data presented in the paper, the observed mortality and the LC50 calculation cannot be confirmed. The formulation content is identified as Roundup® (360g/L, 98%). However, the presented purity appears to be incorrectly stated, as a formulation with 98% purity, would suggest a technical material has been used, so there is uncertainty in actually what has been tested in the study. The tests were conducted according to EPA Guideline "Methods of Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms". However, the origin of the organisms is not given. Therefore, previous exposure the test species may have had to pesticides or other chemicals is unclear. Furthermore, there was no analytical verification of test concentrations reported and the study is non-GLP, thus the reliability of the endpoint is questionable. Given the uncertainty in what was actually tested, the calculated endpoints and the conduct of the test, the study is considered unreliable.
293	Defarge N. et al.	CA 5.6	2012	Letter to the Editor: Developmental and reproductive outcomes of Roundup and Glyphosate in humans and animals.	Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 7, pp. 433	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, reaction on Williams et al., 2012, Toxicol. Environ. Health B Crit. Rev. 15(1):39-96.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
294	Defarge N. et al.	CA 5.8	2016	Co-Formulants in Glyphosate-Based Herbicides Disrupt Aromatase Activity in Human Cells below Toxic Levels.	International journal of environmental research and public health (2016), Vol. 13, No. 3, pp. 264	5.4.1 case b) Relevant but supplementary information: In vitro results not significant for glyphosate vs multiple formulations or mixtures.
295	Demetrio P. M. et al.	CA 8.2.4	2012	Effects of pesticide formulations and active ingredients on the coelenterate <i>Hydra attenuata</i> (Pallas, 1766).	Bulletin of environmental contamination and toxicology (2012), Vol. 88, No. 1, pp. 15	5.4.1 case b) Relevant but supplementary information: Endpoints for <i>Hydra attenuata</i> are not a data requirement for the renewal data requirements under 1107/2009.
296	Demetrio P. M. et al.	CA 8.2.4.1, CP 10.2.1	2014	The effect of cypermethrin, chlorpyrifos, and glyphosate active ingredients and formulations on <i>Daphnia magna</i> (Straus).	Bulletin of environmental contamination and toxicology (2014), Vol. 93, No. 3, pp. 268	5.4.1 case b) Relevant but supplementary information: The test was not performed according to a relevant guideline. Although procedures are well documented, the water qualities during testing are not reported (only stock culture holding conditions are reported) and the test design in the study is not described, such as the number of animals exposed, test media preparation details and acclimation period prior to exposure. There are no biological data presented in order to confirm the achieved endpoints. The glyphosate formulation used in the testing is not the representative formulation for the renewal. Apparent from the endpoints achieved for the technical material and for the formulation, is the increased sensitivity of <i>daphnia</i> to the formulation, which is considered attributable to the co-formulants in the formulation and not to glyphosate. Based on the uncertainty associated with the materials and methods as described above, the study is considered as supplementary only.
297	Dennis P. G. et al.	CA 8.9	2018	The effects of glyphosate, glufosinate, paraquat and paraquat-diquat on soil microbial activity and bacterial, archaeal and nematode diversity	Scientific Reports (2018), Vol. 8, pp. 1	5.4.1 case b) Relevant but supplementary information: Nematode abundance is not an endpoint used in Ecotox risk assessment. However, these data are considered relevant to soil community effects based on single applications. Article is considered supplementary, as the approach used is not a recognised approach for ecotox risk assessment.
298	Deo S. P. et al.	CA 5.9.5	2012	Accidental chemical burns of oral mucosa by herbicide.	Journal of the Nepal Medical Association (2012), Vol. 52, No. 185, pp. 40	5.4.1 case b) Relevant but supplementary information: Large ingestions of formulated glyphosate can often result in caustic injury secondary to the surfactant's detergent actions on the mucous membranes of in people who ingest them. That said, they shouldn't cause microstomia, which tends to result from much more corrosive and scarring chemicals. This should not impact re-registration.
299	DeSesso J. M. et al.	CA 5.6	2012	Letter to the Editor: Toxicity of Roundup and Glyphosate response.	Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 4, pp. 236	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, response on Belle_2012, Journal of Toxicology and Environmental Health Part B Critical Reviews, (2012) Vol. 15, No. 4, pp. 233-235.
300	DeSesso J. M. et al.	CA 5.6	2012	Comment on "Glyphosate impairs male offspring reproductive development by disrupting gonadotropin expression".	Archives of Toxicology (2012), Vol. 86, No. 11, pp. 1791	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Romano et al._2012, Arch Toxicol (2012), Vol. 86, No. 4, pp. 663-73.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
301	DeSesso J. M. et al.	CA 5.6	2012	Response to the comments of Defarge and colleagues.	Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 7, pp. 438	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, reaction on Defarge et al. 2012. Journal of Toxicology and Environmental Health Part B Critical Reviews (2012), Vol. 15, No. 7, pp. 433-437.
302	di Guardo A. et al.	CA 7.5	2016	A case study on monitoring glyphosate in water. Monitoraggio delle acque: il caso studio glifosate.	Informatore Agrario (2016), Vol. 72, No. 23, pp. 55	5.4.1 case b) Relevant but supplementary information: No new data presented. Describes a method for evaluating areas around monitoring stations in Lombardi region of Italy where the concentrations of glyphosate exceed the drinking water standard.
303	Dollinger J. et al.	CA 7.1.3.1.1	2016	Variability of glyphosate and diuron sorption capacities of ditch beds determined using new indicator-based methods.	The Science of the total environment (2016), Vol. 573, pp. 716	5.4.1 case b) Relevant but supplementary information: Supplementary information of glyphosate sorption. Sorption properties of glyphosate to the ditch-bed materials
304	Dollinger J. et al.	CA 7.1.3.1.1	2017	Using fluorescent dyes as proxies to study herbicide removal by sorption in buffer zones.	Environmental science and pollution research international (2017), Vol. 24, No. 12, pp. 11752	5.4.1 case b) Relevant but supplementary information: Soil adsorption data for glyphosate are reported but they are well within the numbers reported in the dossier. Adsorption compared to that of sulforhodamine B fluorescent dye.
305	Dominguez A. et al.	CA 8.4.1	2016	Toxicity of AMPA to the earthworm Eisenia andrei Bouche, 1972 in tropical artificial soil.	Scientific reports (2016), Vol. 6, pp. 19731	5.4.1 case b) Relevant but supplementary information: The study is well-documented and performed according to ISO guideline 11268-1 and 11268-2. However, the artificial soil used is not classed as representative in the EU. Soil characteristics are only partly given as information on CEC, organic carbon content and bulk density are missing. Additionally, one of the validity criteria for the chronic test was not met (the reported minimum number of control juveniles is too low). Endpoints (NOEC, LC50) were not derived and therefore this study delivers only supplementary information.
306	Drasar P. et al.	CA 5.8.3	2018	Glyphosate, an important endocrine disruptor Glyfosat - Dulezity endokrinni disruptor.	Diabetologie Metabolismus Endokrinologie Vyziva (2018), Vol. 21, No. 2, pp. 93	5.4.1 case b) Relevant but supplementary information: review, secondary source.
307	Druart C. et al.	CA 8.2.1	2017	A full life-cycle bioassay with Cantareus aspersus shows reproductive effects of a glyphosate-based herbicide suggesting potential endocrine disruption.	Environmental pollution (2017), Vol. 226, pp. 240	5.4.1 case b) Relevant but supplementary information: The test design is novel and the achieved endpoints cannot be used in an EU ecotox risk assessment for Annex I renewal.
308	Druart C. et al.	CA 8.4.2	2010	Towards the development of an embryotoxicity bioassay with terrestrial snails: screening approach for cadmium and pesticides.	Journal of hazardous materials (2010), Vol. 184, No. 1-3, pp. 26	5.4.1 case b) Relevant but supplementary information: Glyphosate a.i., glyphosate products and other products used to compare toxicity to land snails. LC50 generated. But new method described not to any established guideline.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
309	Druart C. et al.	CA 8.7	2011	Glyphosate and glufosinate-based herbicides: fate in soil, transfer to, and effects on land snails	Journal of soils and sediments (2011), Vol. 11, No. 8, pp. 1373	5.4.1 case b) Relevant but supplementary information: The material and methods part lack some important information. The test design for the exposure of snails to treated food is not specified and thus the intake dose per snail is unclear. Furthermore, the application of the test solutions into the soil is not reported and an even distribution cannot be confirmed. Nevertheless a chemical analysis of the soil during exposure was performed. As the biological data does not report results as an endpoint useful for the risk assessment, the study is not done to a guideline and is non-GLP and can be considered as supplementary only.
310	Dung Le Tien et al.	CA 5.5	2013	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 428	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
311	Ehling S. et al.	CA 6.9	2015	Analysis of Glyphosate and Aminomethylphosphonic Acid in Nutritional Ingredients and Milk by Derivatization with Fluorenylmethyloxycarbonyl Chloride and Liquid Chromatography-Mass Spectrometry.	Journal of agricultural and food chemistry (2015), Vol. 63, No. 48, pp. 10562	5.4.1 case b) Relevant but supplementary information: Selected analysis of samples that provide confirmatory results.
312	Elsner P. et al.	CA 5.9.2	2018	Occupational koebnerization of psoriasis caused by glyphosate.	Journal der Deutschen Dermatologischen Gesellschaft = Journal of the German Society of Dermatology (2018), Vol. 16, No. 1, pp. 70	5.4.1 case b) Relevant but supplementary information: There is not a mechanism for glyphosate to cause psoriasis, particularly 1 week post exposure.
313	Emmanuel L. D. A. et al.	CA 8.7	2015	Effect of glyphosate on <i>Bacillus megaterium</i> with reference to tea ecosystem.	International Journal of Tea Science (2015), Vol. 11, No. 3/4, pp. 16	5.4.1 case b) Relevant but supplementary information: Endpoints are not releatable to an EU ecotox risk assessment, but may inform on discussions over community level effects in soil.
314	Eriguchi M. et al.	CA 5.9.2	2019	Parkinsonism Relating to Intoxication with Glyphosate.	Internal medicine (2019), Vol. 58, No. 13, pp. 1935	5.4.1 case b) Relevant but supplementary information: (Reversible) Parkinsonism in case of acute in-toxication is a well-known effect and not specific for glyphosate.
315	Exterkoetter R. et al.	CA 7.1.4	2019	Potential of terracing to reduce glyphosate and AMPA surface runoff on Latosol	Journal of soils and sediments (2019), Vol. 19, No. 5, pp. 2240	5.4.1 case b) Relevant but supplementary information: Study in Brazil. Demonstrates effectiveness of terrace in reducing total mass loss of glyphosate and AMPA by reducing run-off volume. Did not reduce concentrations of glyphosate in run-off water. Potentially useful information but not directly relevant to EU risk assessment.
316	Fagundez G. A. et al.	CA 8.3.1	2016	Do agrochemicals used during soybean flowering affect the visits of <i>Apis mellifera</i> L.?	Spanish Journal of Agricultural Research (2016), Vol. 14, No. 1, p. e0301	5.4.1 case b) Relevant but supplementary information: Field level investigation where soybean are sprayed with glyphosate and the behaviour of bees is assessed. Findings not directly relateable to EU level risk assessment, as OTT crop application not on GAP - the observed effects are potentially useful for the discussion on indirect effects.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
317	Farkas E. et al.	CA 5.8	2018	Label-free optical biosensor for real-time monitoring the cytotoxicity of xenobiotics: A proof of principle study on glyphosate.	Journal of hazardous materials (2018), Vol. 351, pp. 80	5.4.1 case b) Relevant but supplementary information: in vitro cytotoxicity assays.
318	Feldman V.	CA 5.7	2014	Neurodevelopmental toxicity: Still more questions than answers.	The Lancet Neurology (2014), Vol. 13, No. 7, pp. 645	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Grandjean et al_2014, Lancet Neurol. 2014 Jul;13(7):648-9.
319	Filizadeh Y. et al.	CA 8.2	2011	Toxicity determination of three sturgeon species exposed to glyphosate.	Iranian Journal of Fisheries Sciences (2011), Vol. 10, No. 3, pp. 383	5.4.1 case b) Relevant but supplementary information: LC50 generated for sturgeon species. Glyphosate products used. Guideline not mentioned but suitable methods described. Conducted in Iran.
320	Fluegge K. et al.	CA 5.9.4	2018	Environmental factors influencing the link between childhood ADHD and risk of adult coronary artery disease.	Medical Hypotheses (2018), Vol. 110, pp. 83	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment.
321	Fluegge K. et al.	CA 5.9.4	2016	Glyphosate Use Predicts Healthcare Utilization for ADHD in the Healthcare Cost and Utilization Project net (HCUPnet): A Two-Way Fixed-Effects Analysis.	Polish Journal of Environmental Studies (2016), Vol. 25, No. 4, pp. 1489	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment.
322	Fortes C. et al.	CA 5.9.4	2016	Occupational Exposure to Pesticides With Occupational Sun Exposure Increases the Risk for Cutaneous Melanoma	Journal of occupational and environmental medicine (2016), Vol. 58, No. 4, pp. 370	5.4.1 case b) Relevant but supplementary information: No specific analyses for glyphosate. Interviewers were not blinded. Recall bias may produce spurious positive associations. Confounding not addressed adequately. This publication is considered unreliable.
323	Frappart M. et al.	CA 5.9.2	2011	A fatal acute poisoning with glyphosate: importance of gastrointestinal toxicity. Original title: Une intoxication aigue fatale au glyphosate : importance de la toxicite digestive.	Annales francaises d'anesthesie et de reanimation (2011), Vol. 30, No. 11, pp. 852	5.4.1 case b) Relevant but supplementary information: This case report describes caustic injury to the GI tract and multi-organ failure after formulated glyphosate overdose. The clinical course is consistent with previous reports of overdose and should not impact re-registration.
324	Fuentes L. et al.	CA 8.1.4	2014	Role of sediments in modifying the toxicity of two Roundup formulations to six species of larval anurans.	Environmental toxicology and chemistry (2014), Vol. 33, No. 11, pp. 2616	5.4.1 case b) Relevant but supplementary information: No specific endpoints presented that could be used in an EU level Annex I Ecotox risk assessment.
325	Garcia-Torres T. et al.	CA 8.4.2	2014	Exposure assessment to glyphosate of two species of annelids.	Bulletin of environmental contamination and toxicology (2014), Vol. 93, No. 2, pp. 209	5.4.1 case b) Relevant but supplementary information: Information may be used to support the lack of effects in earthworm studies.
326	Garlich F. M. et al.	CA 5.9.5	2014	Hemodialysis clearance of glyphosate following a life-threatening ingestion of glyphosate-surfactant herbicide.	Clinical toxicology (2014), Vol. 52, No. 1, pp. 66	5.4.1 case b) Relevant but supplementary information: This article discusses the successful use of haemodialysis in a patient who was critically ill after a formulated glyphosate overdose.
327	Gaur H. et al.	CA 8.2.1	2019	Glyphosate induces toxicity and modulates calcium and NO signaling in zebrafish embryos.	Biochemical and biophysical research communications (2019) Vol. 513, No. 4, pp. 1070	5.4.1 case b) Relevant but supplementary information: Considered supplementary as the approaches used are not used in Ecotox risk assessment for Annex I renewal.
328	Gencer N. et al.	CA 5.8.2	2012	In vitro effects of some herbicides and fungicides on human erythrocyte carbonic anhydrase activity	Fresenius Environmental Bulletin (2012), Vol. 21, No. 3, pp. 549	5.4.1 case b) Relevant but supplementary information: Glyphosate tested was not sufficiently characterised, the conditions of the inhibition assay are incompletely reported, no positive control was used and the statistics are not well reported. This publication is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
329	Geng C. et al.	CA 7.1.3.1.1	2015	Modeling the release of organic contaminants during compost decomposition in soil.	Chemosphere (2015), Vol. 119, pp. 423	5.4.1 case b) Relevant but supplementary information: The paper is about degradation and adsorption of glyphosate on compost and soils and the data is consistent with endpoints reported in the dossier it does not change the risk assessment.
330	Ghafoor A. et al.	CA 7.1.3.1.1	2013	Modelling pesticide sorption in the surface and subsurface soils of an agricultural catchment.	Pest management science (2013), Vol. 69, No. 8, pp. 919	5.4.1 case b) Relevant but supplementary information: Sorption of glyphosate was measured in surface and subsurface soils to test an 'extended' partitioning model that also accounts for inorganic sorbents and pH as well as organic sorbents.
331	Gil H-W. et al.	CA 5.9.5	2013	Effect of intravenous lipid emulsion in patients with acute glyphosate intoxication.	Clinical toxicology (2013), Vol. 51, No. 8, pp. 767	5.4.1 case b) Relevant but supplementary information: This paper evaluated the use of lipid therapy to treat formulated glyphosate overdoses. The mortality in these overdoses is usually due to the caustic injury to the mucosa membrane from the surfactant moiety of the product. There is some evidence that lipid emulsion can decrease the toxicity of the surfactant. These are suicidal ingestions and should not impact re-registration.
332	Goldner W. S. et al.	CA 5.9.4	2013	Hypothyroidism and Pesticide Use Among Male Private Pesticide Applicators in the Agricultural Health Study	Journal of Occupational and Environmental Medicine (2013), Vol. 55, No. 10, pp. 1171	5.4.1 case b) Relevant but supplementary information: No correlation between effects and glyphosate use.
333	Goldstein D. A. et al.	CA 5.7	2014	Neurodevelopmental toxicity: Still more questions than answers.	The Lancet Neurology (2014), Vol. 13, No. 7, pp. 645	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Grandjean et al. 2014, Lancet Neurol (2014), Vol. 13, No. 7, pp. 648-9.
334	Goldstein D. A. et al.	CA 5.9.1	2012	Comment: Aris and Leblanc "Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada".	Reproductive Toxicology (2012), Vol. 33, No. 1, pp. 120	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, comments on Aris et al. 2011, Reprod. Toxicol (2011), Vol. 31, pp. 528-533.
335	Goldstein D. A. et al.	CA 5.9.2	2018	Reversible Parkinsonism following glyphosate exposure.	Parkinsonism and Related Disorders (2018), Vol. 56, pp. 107	5.4.1 case b) Relevant but supplementary information: Letter ref to Zheng et al. 2018, Parkinsonism Relat Disord. (2018), Vol. 56, pp.108.
336	Grandcoin A. et al.	CA 7.1.2.1.2, CA 7.1.3.1.2, CA 7.2.1.3	2017	AminoMethylPhosphonic acid (AMPA) in natural waters: Its sources, behavior and environmental fate.	Water research (2017), Vol. 117, pp. 187	5.4.1 case b) Relevant but supplementary information: Review paper, paper does not report experimental results but it is a comprehensive review on the sources of AMPA in the environment.
337	Grandjean P. et al.	CA 5.7	2014	Neurodevelopmental toxicity: Still more questions than answers - Authors' response.	The Lancet Neurology (2014), Vol. 13, No. 7, pp. 648	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, author responding to multiple Letters to Editors
338	Greim H. et al.	CA 5.5	2015	Evaluation of carcinogenic potential of the herbicide glyphosate, drawing on tumor incidence data from fourteen chronic/carcinogenicity rodent studies.	Critical reviews in toxicology (2015), Vol. 45, No. 3, pp. 185	5.4.1 case b) Relevant but supplementary information: review, secondary source.
339	Gress S. et al.	CA 5.8	2015	Glyphosate-based herbicides potentially affect cardiovascular system in mammals: review of the literature.	Cardiovascular toxicology (2015), Vol. 15, No. 2, pp. 117	5.4.1 case b) Relevant but supplementary information: review, secondary source.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
340	Gros P. et al.	CA 7.1.3.1.1	2017	Glyphosate binding in soil as revealed by sorption experiments and quantum-chemical modeling.	The Science of the total environment (2017), Vol. 586, pp. 527	5.4.1 case b) Relevant but supplementary information: A multitude of binding mechanisms to clay minerals and organic colloids studied make the occurrence of free glyphosate rather unlikely but a leaching of glyphosate complexes via preferential flow path through soil and transfer to waterways rather likely.
341	Grunewald W. et al.	CA 5.5	2013	Comment on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 447	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al., 2012, Food Chemical Toxicol. (2012), retracted
342	Gui Y-X. et al.	CA 5.8	2012	Glyphosate induced cell death through apoptotic and autophagic mechanisms.	Neurotoxicology and teratology (2012), Vol. 34, No. 3, pp. 344	5.4.1 case b) Relevant but supplementary information: Unrealistically high in vitro dosing in the mM range.
343	Gungordu A.	CA 8.1.4	2013	Comparative toxicity of methidathion and glyphosate on early life stages of three amphibian species: <i>Pelophylax ridibundus</i> , <i>Pseudepidalea viridis</i> , and <i>Xenopus laevis</i> .	Aquatic toxicology (2013), Vol. 140-141, pp. 220	5.4.1 case b) Relevant but supplementary information: Endpoints for amphibians are not a data requirement for Annex I renewal in the EU, as there are no recognised guidelines.
344	Gungordu A. et al.	CA 8.1.4	2016	Integrated assessment of biochemical markers in premetamorphic tadpoles of three amphibian species exposed to glyphosate- and methidathion-based pesticides in single and combination forms.	Chemosphere (2016), Vol. 144, pp. 2024	5.4.1 case b) Relevant but supplementary information: Amphibian enzyme level based endpoints are not a data requirement for the EU level ecotox risk assessment for Annex I purposes. Endpoints cannot be directly related to the EU level Ecotox risk assessment.
345	Haekenberger Davorka K. et al.	CA 8.4.1	2018	Acute and subchronic effects of three herbicides on biomarkers and reproduction in earthworm <i>Dendrobaena veneta</i> .	Chemosphere (2018), Vol. 208, pp. 722	5.4.1 case b) Relevant but supplementary information: The chronic test was performed according to OECD 222. However, the study was not conducted to GLP. Information on validity criteria are missing, and there is not analytical verification of soil concentrations. The unexpectedly high number of cocoons and the low number of juveniles being produced in the control group at the end of the study suggests that the quality of the earthworms going into the study may have been low. According to OECD 222, by the end of the test, the number of juveniles produced per adult worm should be > 30. In this case, with six adult worms per replicate there was a mean production (juveniles per worm) of 2.67 worms per adult. It is also understood that the OECD 222 test guideline uses a different species (<i>Eisenia fetida</i>) and not <i>Dendrobaena veneta</i> . It is relevant to consider juvenile production in the control as a check on the test system robustness. This cannot be confirmed in this case. Therefore, the study can be considered acceptable as supplementary information.
346	Haggard D. E. et al.	CA 5.8.3	2018	Erratum to High-Throughput H295R Steroidogenesis Assay: Utility as an Alternative and a Statistical Approach to Characterize Effects on Steroidogenesis.	Toxicological Sciences (2018), Vol. 164, No. 2, pp. 646	5.4.1 case b) Relevant but supplementary information: Erratum to Haggard et al., 2018, Toxicological Sciences (2018), Vol. 162, No. 2, pp. 509-534.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
347	Haggard D. E. et al.	CA 5.8.3	2018	High-throughput H295R steroidogenesis assay: utility as an alternative and a statistical approach to characterize effects on steroidogenesis	Toxicological Sciences (2018), Vol. 162, No. 2, pp. 509	5.4.1 case b) Relevant but supplementary information: ToxCast data for high throughput H295R assay not available on glyphosate, presumably because it is not soluble in DMSO.
348	Hagner M. et al.	CA 7.1.4.1.1	2013	The effects of biochar, wood vinegar and plants on glyphosate leaching and degradation	European journal of soil biology (2013), Vol. 58, pp. 1	5.4.1 case b) Relevant but supplementary information: The paper investigated addition of biochar, plants, and wood vinegar to the soil in pots and reported that biochar decreased the leaching of glyphosate, it is only relevant for mechanism of sorption but not for risk assessment.
349	Hammond B. et al.	CA 5.5	2013	A Comment on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 444	5.4.1 case b) Relevant but supplementary information: Letter to the Editor; Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
350	Han S. K. et al.	CA 5.9	2010	Use of a lipid emulsion in a patient with refractory hypotension caused by glyphosate-surfactant herbicide.	Clinical toxicology (2010), Vol. 48, No. 6, pp. 566	5.4.1 case b) Relevant but supplementary information: This is a case report of a suicidal ingestion of formulated glyphosate that was treated with lipid emulsion and symptoms improved. As this is a description of medical management of a suicidal overdose, this should not impact re-registration
351	Hansen L. R. et al.	CA 8.2.4	2016	Behavioral responses of juvenile Daphnia magna after exposure to glyphosate and glyphosate-copper complexes.	Aquatic toxicology (2016), Vol. 179, pp. 36	5.4.1 case b) Relevant but supplementary information: Paper considers the influence of metals in daphnia testing and their influence on toxicity. Soils on the toxicity of endpoints considering speciation and enhanced toxicity in the presence of metals are not used in the EU level ecotox risk assessment.
352	Hansen N. B. et al.	CA 5.9.5	2013	Severe toxicity from accidental glyphosate ingestion in a child.	Clinical Toxicology (2013), Vol. 51, No. 4, pp. 354	5.4.1 case b) Relevant but supplementary information: This is a case report of an accidental ingestion of formulated glyphosate resulting in mild corrosive injury to the GI tract in a small child and should not impact re-registration.
353	Heinemann J. A.	CA 5.5	2013	Food and chemical toxicology.	Food and Chemical Toxicology (2013), Vol. 53, pp. 442	5.4.1 case b) Relevant but supplementary information: Letter to the Editor; Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
354	Helander M. et al.	CA 8.6	2019	Glyphosate residues in soil affect crop plant germination and growth.	Scientific reports (2019), Vol. 9, No. 1, pp. 19653	5.4.1 case b) Relevant but supplementary information: The study presents endpoints that may be considered relevant to a risk assessment, however, the test design does not reflect the seedling emergence study required as part of the data requirements.
355	Henneberger P. K. et al.	CA 5.9.4	2014	Exacerbation of symptoms in agricultural pesticide applicators with asthma.	International archives of occupational and environmental health (2014), Vol. 87, No. 4, pp. 423	5.4.1 case b) Relevant but supplementary information: No adverse effects correlating with glyphosate use.
356	Honskii Y. I. et al.	CA 5.8.2	2011	Effects of heavy metal salts and organophosphoric pesticides on protein metabolism in exposed white rats	Medichna Khimiya (2011), Vol. 13, No. 4, pp. 100	5.4.1 case b) Relevant but supplementary information: Mechanistic study without clear relevance for the risk assessment / glyphosate.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
357	Hopa E. et al.	CA 5.1	2011	The inhibitory effects of some pesticides on human erythrocyte glucose-6-phosphate dehydrogenase activity (in vitro).	Fresenius Environmental Bulletin (2011), Vol. 20, No. 5a, pp. 1314	5.4.1 case b) Relevant but supplementary information: glyphosate and 2,4-D had been used as test material from a "local pesticide shop". No further identification of the test material had been provided, moreover the study design is not well described.
358	Hoppin J. A. et al.	CA 5.9.4	2017	Pesticides are Associated with Allergic and Non-Allergic Wheeze among Male Farmers.	Environmental health perspectives (2017), Vol. 125, No. 4, pp. 535	5.4.1 case b) Relevant but supplementary information: The exposure and outcome data were concurrent, so a temporal relationship could not be established. The extraordinary number of positive statistically significant findings mitigates against interpreting any one finding as likely to be causal. This publication is considered unreliable.
359	Hour B. T. et al.	CA 5.9.5	2012	Herbicide roundup intoxication: successful treatment with continuous renal replacement therapy.	The American journal of medicine (2012), Vol. 125, No. 8, pp. 1	5.4.1 case b) Relevant but supplementary information: This article discusses the use of CVVD in formulated glyphosate overdoses and medical management of suicidal ingestions and therefore should not impact registration decisions
360	Indirakshi J. et al.	CA 5.9.5	2017	Toxic Epidermal Necrolysis and Acute Kidney Injury due to Glyphosate Ingestion.	Indian journal of critical care medicine (2017), Vol. 21, No. 3, pp. 167	5.4.1 case b) Relevant but supplementary information: Glyphosate based formulations are not known to cause TEN which is a t-cell mediated type IV hypersensitivity reaction. >1% of glyphosate is absorbed through the skin and large ingestions have caustic effects on the GI tract which can result in multi-organ failure.
361	Isaac A. O. et al.	CA 8.2.1	2017	Behavioural and some physiological assessment of glyphosate and paraquat toxicity to juveniles of African catfish, <i>Clarias gariepinus</i> .	Pakistan Journal of Zoology (2017), Vol. 49, No. 1, pp. 183	5.4.1 case b) Relevant but supplementary information: Although the study itself is not directly relatable to an EU level ecotoxicological risk assessment for Amex I renewal purposes, the study was potentially considered as sublethal effects on fish behaviour following exposure to glyphosate were described.
362	Issa A. A. E. et al.	CA 8.2.6	2013	Alterations in some metabolic activities of <i>Scenedesmus quadricauda</i> and <i>Merismopedia glauca</i> in response to glyphosate herbicide.	Journal of Biology and Earth Sciences (2013), Vol. 3, No. 1, pp. B17	5.4.1 case b) Relevant but supplementary information: The reported endpoints in terms of growth rates and pigment levels are not relatable to the EU level risk assessment for the renewal. The identity of the test items cannot be confirmed.
363	Iwai K. et al.	CA 5.9.5	2014	Utility of upper gastrointestinal endoscopy for management of patients with roundup poisoning.	Journal of Clinical Toxicology (2014), Vol. 4, No. 6, pp. 1	5.4.1 case b) Relevant but supplementary information: This article discusses the use of endoscopy to treat formulated glyphosate overdose and medical management of suicidal ingestions and therefore should not impact registration decisions.
364	Jacques M. T. et al.	CA 8.7	2019	Reprotoxicity of glyphosate-based formulation in <i>Caenorhabditis elegans</i> is not due to the active ingredient only.	Environmental pollution (2019), Vol. 252, No. Pt B, pp. 1854	5.4.1 case b) Relevant but supplementary information: The toxicity of glyphosate (glyphosate in monoisopropylamine salt) and its commercial formulation Temifin - Dexter Latina to the nematode <i>Caenorhabditis elegans</i> was investigated. Reproductive capacity was evaluated by means of brood size. The material and methods section lack some important information. The preparation of the test solutions and application of the test item are not described. Test concentrations, controls and loading per replicate are not specified and therefore not verifiable. Description of exposure throughout the study is also missing. The formulation used is not the representative formulation for the renewal. Furthermore, no useful endpoint for the regulatory risk assessment of terrestrial organisms can be derived.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
365	Jain S. et al.	CA 8.6.2	2012	Herbicidal action on germination, amylase activity and gibberellin level in <i>Cajanus cajan</i> (L.).	Bioscience Discovery Journal (2012), Vol. 3, No. 2, pp. 232	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP and the test substance source and identity could not be verified. The study has not been conducted according to a recognized test guideline and there are no validity criteria presented. The authors state that glyphosate affects the level of gibberellin and amylase activity, as well as causing the food reserve content of seedlings to decrease gradually with increase in concentration. However, given the lack of standard guidelines, unclear experimental design and approach, test substance and dose rates not sufficiently being reported as well as challenges in interpreting the study results, make reaching any reliable conclusions from the study quite challenging.
366	Jansons M. et al.	CA 6.9	2018	Occurrence of glyphosate in beer from the Latvian market.	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment (2018), Vol. 35, No. 9, pp. 1767	5.4.1 case b) Relevant but supplementary information: Includes information on residues in beer. Not directly relevant to dietary risk assessment but provides supplemental information.
367	Jarmul-Pietrasczyk J. et al.	CA 8.4.1	2012	Herbicide toxicity to the California earthworms <i>Eisenia fetida</i> Sav. and <i>Dendrobaena veneta</i> Rosa	Ecological Chemistry and Engineering A (2012), Vol. 19, No. 9, pp. 1133	5.4.1 case b) Relevant but supplementary information: This study compared the toxicity of three different commercially available formulations on the reproduction of earthworms, among them a glyphosate containing product (Glifocyd 360 SL). Further detail on active substance content, source and storage conditions were not provided. The study was not conducted according to a recognized test guideline nor under GLP. The origin of the earthworm species and their environmental holding conditions prior to and during the study have not been included. Information on the test soil characteristics is also missing and application of the test item to the soil is not described in detail. Sublethal and reproductive parameters of the control were reported, but information about control mortality is missing. In the chronic test only one single test item concentration was tested, with this information for the acute study missing. The endpoint generated from this study is given in mg/L and it is not clear how it can be transferred to soil concentrations as the bulk density in the test system is unknown and the statistical analysis is not provided in detail. Therefore, the endpoint presented is considered unreliable.
368	Jasper R. et al.	CA 5.3	2012	Evaluation of biochemical, hematological and oxidative parameters in mice exposed to the herbicide glyphosate-Roundup®).	Interdisciplinary toxicology (2012), Vol. 5, No. 3, pp. 133	5.4.1 case b) Relevant but supplementary information: Gavage formulated product, effects not attributable to glyphosate.
369	Jayasumana C. et al.	CA 5.9.2	2014	Glyphosate, hard water and nephrotoxic metals: are they the culprits behind the epidemic of chronic kidney disease of unknown etiology in Sri Lanka?	International journal of environmental research and public health (2014), Vol. 11, No. 2, pp. 2125	5.4.1 case b) Relevant but supplementary information: Presents a hypothesis which is not tested, only discussed.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
370	Jayasumana C. et al.	CA 5.9.2	2015	Simultaneous exposure to multiple heavy metals and glyphosate may contribute to Sri Lankan agricultural nephropathy.	BMC nephrology (2015), Vol. 16, pp. 103	5.4.1 case b) Relevant but supplementary information: Presents a hypothesis which is not tested, only discussed
371	Jiang Y. et al.	CA 7.2.1.3	2016	The role of Fe(III) on phosphate released during the photo-decomposition of organic phosphorus in deionized and natural waters.	Chemosphere (2016), Vol. 164, pp. 208	5.4.1 case b) Relevant but supplementary information: Study of the role of Fe ³⁺ in photodegradation of glyphosate in natural water.
372	Jofre D. M. et al.	CA 8.2.1	2013	Fish Toxicity of Commercial Herbicides Formulated With Glyphosate	Journal of Environmental & Analytical Toxicology. Vol. 4, no. 1, pp. 1	5.4.1 case b) Relevant but supplementary information: Data considered supplemental as the test design and the achieved endpoints are not those used in EU risk assessment. The test substance although not specifically identified, in terms of the SL salt of glyphosate, looks like it could be at a similar a.e. content.
373	Jomichen J. et al.	CA 5.9.1	2017	Australian work exposures studies: occupational exposure to pesticides.	Occupational and environmental medicine (2017), Vol. 74, No. 1, pp. 46	5.4.1 case b) Relevant but supplementary information: Occupational exposure survey.
374	Jovic-Stosic J. et al.	CA 5.9.5	2013	Lipid emulsion in treatment of cardiovascular collapse in acute poisoning.	Clinical Toxicology (2013), Vol. 51, No. 4, pp. 288.	5.4.1 case b) Relevant but supplementary information: This is a case series that included one patient with a formulated glyphosate overdose and treatment with ILE. This describes medical management of overdoses and should not impact re-registration.
375	Jovic-Stosic J. et al.	CA 5.9.5	2016	Intravenous lipid emulsion in treatment of cardiocirculatory disturbances caused by glyphosate-surfactant herbicide poisoning.	Vojnosanitetski pregled (2016), Vol. 73, No. 4, pp. 390	5.4.1 case b) Relevant but supplementary information: Medical case of intentional ingestion. ILE has been proposed as a possible therapy for formulated glyphosate overdoses. As this was a suicide attempt, this should not impact re-registration.
376	Jovic-Stosic J. et al.	CA 5.9.5	2016	Antidotal use of intravenous lipid emulsion: 5 years' experience in an intensive care unit.	Clinical Toxicology (2016), Vol. 54, No. 4, pp. 476.	5.4.1 case b) Relevant but supplementary information: This is a report about using ILE to treat overdoses with 1 patient who ingested formulated glyphosate. This paper should not impact re-registration.
377	Jyoti W. et al.	CA 5.9.5	2014	Esophageal perforation and death following glyphosate poisoning.	Journal of postgraduate medicine (2014), Vol. 60, No. 3, pp. 346	5.4.1 case b) Relevant but supplementary information: Formulated glyphosate can cause caustic injury to the mucosa membrane after ingestion. The esophagus is especially prone to perforation. Due to the absence of a serosa, the esophagus is notoriously difficult to repair & heal. This is not an unusual feature of caustic injury. As this was a suicide attempt, this should not impact re-registration.
378	Kachuri L. et al.	CA 5.5	2013	Multiple pesticide exposures and the risk of multiple myeloma	International Journal of Cancer (2013), Vol. 133, No. 8, pp. 1846	5.4.1 case b) Relevant but supplementary information: Exposure to multiple pesticides and a case control study which is subject to recall bias.
379	Kamijo Y. et al.	CA 5.9.5	2016	A multicenter retrospective survey of poisoning after ingestion of herbicides containing glyphosate potassium salt or other glyphosate salts in Japan.	Clinical toxicology (2016), Vol. 54, No. 2, pp. 147	5.4.1 case b) Relevant but supplementary information: This article discusses the incidence of hyperkalemia and multi-organ failure after formulated glyphosate ingestions. Neither of these findings are surprising in the setting of potassium salt or surfactant ingestions.
380	Kamijo Y. et al.	CA 5.9.5	2012	Glyphosate-surfactant herbicide products containing glyphosate potassium salt can cause fatal hyperkalemia if ingested in massive amounts.	Clinical toxicology (2012), Vol. 50, No. 2, pp. 159	5.4.1 case b) Relevant but supplementary information: This article discusses the fact that certain glyphosate-potassium salt formulations can cause fatal hyperkalemia in overdose. This article discusses a feature of suicidal ingestions and therefore should not impact registration decisions.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
381	Karasali H. et al.	CA 7.5	2019	Investigation of the presence of glyphosate and its major metabolite AMPA in Greek soils.	Environmental science and pollution research international (2019), Vol. 26, No. 36, pp. 36308	5.4.1 case b) Relevant but supplementary information: Paper provides data on glyphosate & AMPA concentrations in Greek soils, but there is no correlating information on glyphosate rates applied or any information on soil characterization.
382	Karberg K. et al.	CA 5.9.2	2018	Glyphosate levels in older adults.	JAMA - Journal of the American Medical Association (2018), Vol. 319, No. 13, pp. 1384	5.4.1 case b) Relevant but supplementary information: Medical data which should not impact the re-registration.
383	Kato Y.	CA 5.9.5	2015	Three cases of an extreme hyperkalemia associated with glyphosate potassium herbicide poisoning	The Japanese journal of toxicology (2015), Vol. 28, No. 4, pp. 368	5.4.1 case b) Relevant but supplementary information: This article describes a case series of three patients who presented with extreme hyperkalemia after suicidal ingestion of formulated glyphosate. This is not unexpected in an ingestion involving glyphosate formulated product with potassium salts and should not affect re-registration.
384	Kawagashira Y. et al.	CA 5.9.5	2017	Vasculitic Neuropathy Following Exposure to a Glyphosate-based Herbicide.	Internal medicine (2017), Vol. 56, No. 11, pp. 1431	5.4.1 case b) Relevant but supplementary information: This article discussed the development of painful discoloration of the toes and feet four months after the patient spray applied formulated glyphosate to crops. Interestingly, the patient was taking warfarin therapeutically, which can cause the well-described "purple toe syndrome". There is not a mechanism by which sprayed formulated glyphosate can be absorbed by the skin and directly impact small vasculature or neurons in the feet.
385	Kennedy E. et al.	CA 8.6	2012	Herbicide Phragmites australis: effects on litter decomposition, microbial biomass, and macroinvertebrate communities.	Fundamental and Applied Limnology (2012), Vol. 180, No. 4, pp. 309	5.4.1 case b) Relevant but supplementary information: This paper provides information that is considered relevant to the biodiversity.
386	Kepler R. M. et al.	CA 7.5	2019	Soil microbial communities in diverse agroecosystems exposed to the herbicide glyphosate.	Applied and environmental microbiology (2020), Vol. 18, No. 86	5.4.1 case b) Relevant but supplementary information: Not relevant to existing endpoint but provide support that glyphosate does not have a negative impact on soil microorganisms.
387	Khot R. et al.	CA 5.9.2	2018	Glyphosate poisoning with acute fulminant hepatic failure.	Asia Pacific Journal of Medical Toxicology (2018), Vol. 7, No. 3, pp. 86	5.4.1 case b) Relevant but supplementary information: glyphosate is not hepatotoxic by any route.
388	Kier L. D.	CA 5.4	2015	Review of genotoxicity biomonitoring studies of glyphosate-based formulations.	Critical reviews in toxicology (2015), Vol. 45, No. 3, pp. 209	5.4.1 case b) Relevant but supplementary information: review, secondary source
389	Kier L. D. et al.	CA 5.4	2013	Review of genotoxicity studies of glyphosate and glyphosate-based formulations.	Critical reviews in toxicology (2013), Vol. 43, No. 4, pp. 283	5.4.1 case b) Relevant but supplementary information: review, secondary source.
390	Kim E. et al.	CA 5.9.5	2016	Patterns of drugs & poisons in southern area of South Korea in 2014.	Forensic Science International (2016), Vol. 269, pp. 50	5.4.1 case b) Relevant but supplementary information: This is an article describing the chemicals / pharmaceuticals that were used in fatal overdoses that were forensically evaluated at the Busan Institute of National Forensic Services. Out of 606 fatalities, agricultural chemicals were involved in 5 and glyphosate was detected in 2 of the cases.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
391	Kim Y. H. et al.	CA 5.9.5	2014	Heart rate-corrected QT interval predicts mortality in glyphosate-surfactant herbicide-poisoned patients.	The American journal of emergency medicine (2014), Vol. 32, No. 3, pp. 203	5.4.1 case b) Relevant but supplementary information: This article discusses the utility of the QTc interval to predict mortality in suicidal ingestions of glyphosate-based formulation. It is not unexpected for critically ill patients to develop a long QTc.
392	Kim Y. H. et al.	CA 5.9.5	2016	Prognostic Factors in Emergency Department Patients with Glyphosate Surfactant Intoxication: Point-of-Care Lactate Testing.	Basic & clinical pharmacology & toxicology (2016), Vol. 119, No. 6, pp. 604	5.4.1 case b) Relevant but supplementary information: This study evaluated the use of lactate as a predictor of mortality and found a statistically significant association between a serum lactate of 4.7mmol/L and mortality in formulated glyphosate overdoses. This is not surprising as caustic injury due to detergent-like surfactants will cause cell death and thereby increase lactate levels. This article discusses predictors of mortality in suicidal ingestions and therefore should not impact registration decisions.
393	Kim Y-h., et al.	CA 5.8	2013	Mixtures of glyphosate and surfactant TN20 accelerate cell death via mitochondrial damage-induced apoptosis and necrosis.	Toxicology in vitro : an international journal published in association with BIBRA (2013), Vol. 27, No. 1, pp. 191	5.4.1 case b) Relevant but supplementary information: In vitro cytotoxicity endpoints measured for glyphosate & surfactant alone and in combination. No significant effects with glyphosate alone.
394	Kimmel G. L. et al.	CA 5.6.2	2013	Evaluation of developmental toxicity studies of glyphosate with attention to cardiovascular development.	Critical reviews in toxicology (2013), Vol. 43, No. 2, pp. 79	5.4.1 case b) Relevant but supplementary information: review, secondary source.
395	Kjaer J. et al.	CA 7.1.4.3, CA 7.5	2011	Reply to Comments on "Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils".	Chemosphere (2011), Vol. 85, No. 9, pp. 1539	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Reply to Comments on by Petersen et al. 2011, Chemosphere (2011), Vol. 84, No. 4, pp. 471-479.
396	Klatyik S. et al.	CA 7.5	2017	Dissipation of the herbicide active ingredient glyphosate in natural water samples in the presence of biofilms	International journal of environmental analytical chemistry (2017), Vol. 97, No. 10, pp. 901	5.4.1 case b) Relevant but supplementary information: The article reports glyphosate dissipation in irradiated natural water samples from European surface waters under laboratory conditions. The water was only characterised for pH and conductivity. No dark control experiments were conducted. Average results of concentration measurements are only presented as graphical plots and not discussed in detail (focus on effect of biofilms). This publication is considered unreliable.
397	Knezevic V. et al.	CA 5.9.5	2012	Early continuous dialysis in acute glyphosate-surfactant poisoning	Srpski arhiv za celokupno lekarstvo (2012), Vol. 140, No. 9-10, pp. 648	5.4.1 case b) Relevant but supplementary information: Glyphosate based formulations can cause renal injury in overdose, and the K+ formulations may result in hyperkalemia. It is therefore reasonable to start hemodialysis or hemofiltration in critically ill patients with kidney failure or hyperkalemia. As this was a suicide attempt, this should not impact re-registration.
398	Knudsen L. E. et al.	CA 5.9.1	2017	Biomonitoring of Danish school children and mothers including biomarkers of PBDE and glyphosate.	Reviews on environmental health (2017), Vol. 32, No. 3, pp. 279	5.4.1 case b) Relevant but supplementary information: All glyphosate levels many orders of magnitude lower than the ADI.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
399	Kongtip P. et al.	CA 5.9.4	2019	Thyroid Hormones in Conventional and Organic Farmers in Thailand.	International journal of environmental research and public health (2019), Vol. 16, No. 15, pp. 2704	5.4.1 case b) Relevant but supplementary information: The higher incidence of thyroid disease in women (more numerous in organic farming), no data on the menopausal status of the women (change in thyroid hormones), the collection of data within dairies of the farmers may be incomplete, the exposure of farmers to pesticides prior to the study and prior to starting organic farming, and the results for glyphosate should have been examined for confounding from other pesticides that were correlated with glyphosate use. Moreover, the use rate and bioavailability (Acquavella et al. (2004) Environmental Health Perspectives Vol. 112(3), 321-326; Acquavella et al. (2006) Epidemiology, Vol. 17(1), 69-74) of glyphosate was lower than that of the other pesticides used. Since the determination of serum thyroid hormone levels is key in this study, the methods of analysis should have been better documented. This publication is considered unreliable.
400	Kuhn R. et al.	CA 7.1.2.1.2	2017	Identification of the Complete Photodegradation Pathway of Ethylenediaminetetra(methylenephosphonic acid) in Aqueous Solution	Clean: Soil, Air, Water (2017), Vol. 45, No. 5, pp. 1	5.4.1 case b) Relevant but supplementary information: Paper describes another source of AMPA other than glyphosate - supplemental information.
401	Kumar M. S. A. et al.	CA 8.2.4	2013	Toxic impacts of two organophosphorus pesticides on the acetylcholinesterase activity and biochemical composition of freshwater fairy shrimp <i>Streptocephalus dichotomus</i> .	International Journal of Pharma and Bio Sciences (2013), Vol. 4, No. 2, pp. B-966	5.4.1 case b) Relevant but supplementary information: The test does not follow a recognised test guideline. There are no details on the test design used in the exposure part of the test, such as test media preparation and test vessels / replication details, and the water quality / environmental conditions during the exposure period. Nor are there any validity criteria stated, which are necessary to establish the acceptability of the study (eg. shrimp cyst hatching success and the percentage survival in the control group in both toxicity tests). There are no biological data presented to confirm the reported LC50 values. There is no rationale described justifying the duration of exposure. Details on the test substances used in the test are not presented and there is no analytical verification of test concentrations, so exposure levels cannot be verified. The study is considered unreliable.
402	Kurenbach B. et al.	CA 5.8	2015	Sublethal exposure to commercial formulations of the herbicides dicamba, 2,4-dichlorophenoxyacetic acid, and glyphosate cause changes in antibiotic susceptibility in <i>Escherichia coli</i> and <i>Salmonella enterica</i> serovar Typhimurium.	mBio (2015), Vol. 6, No. 2, pp. E00009	5.4.1 case b) Relevant but supplementary information: Endpoints at doses tested not relevant to residues levels or to human health.
403	Kwiatkowska M. et al.	CA 5.8	2014	The effect of glyphosate, its metabolites and impurities on erythrocyte acetylcholinesterase activity.	Environmental toxicology and pharmacology (2014), Vol. 37, No. 3, pp. 1101	5.4.1 case b) Relevant but supplementary information: In vitro effects only noted at excessively high doses, 250-5000 uM.
404	Kylin H.	CA 7.5	2013	Time-integrated sampling of glyphosate in natural waters.	Chemosphere (2013), Vol. 90, No. 6, pp. 1821	5.4.1 case b) Relevant but supplementary information: Provides information on storage stability of surface water samples that can be used to evaluate results from other surface water monitoring studies.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
405	la Cecilia D. et al.	CA 7.1.1, CA 7.1.2	2018	Analysis of glyphosate degradation in a soil microcosm	Environmental pollution (2018), Vol. 233, pp. 201	5.4.1 case b) Relevant but supplementary information: Factors affecting chemical and microbial degradation of glyphosate.
406	la Cecilia D. et al.	CA 7.1.1.1	2018	Glyphosate dispersion, degradation, and aquifer contamination in vineyards and wheat fields in the Po Valley, Italy.	Water research (2018), Vol. 146, pp. 37	5.4.1 case b) Relevant but supplementary information: Numeric model used to predict glyphosate degradation in soil layers and concentrations of glyphosate and AMPA in shallow aquifer from use of glyphosate in vineyards and wheat fields in PoValley, Italy. See Conclusions for results of interest. Since model, not directly relevant to risk assessment, supplementary only.
407	Lam C. H. et al.	CA 8.2.6	2020	Toxicity of herbicides to cyanobacteria and phytoplankton species of the San Francisco Estuary and Sacramento-San Joaquin River Delta, California, USA.	Journal of environmental science and health. Part A, Toxic/hazardous substances & environmental engineering (2020), Vol. 5, pp. 107	5.4.1 case b) Relevant but supplementary information: As the composition of the Roundup used in the test cannot be confirmed, the study must be considered as being supplementary. Roundup Custom is for aquatic uses so would not contain surfactants. It is not clear from the study if the product was tested with an approved surfactant added or not as would be detailed on the label. There is limited information in the paper on the label. Roundup Custom is not the representative formulation for the renewal and aquatic uses are not on the current GAP table.
408	Langrand J. et al.	CA 5.9.2	2019	Increased severity associated with tallowamine in acute glyphosate poisoning.	Clinical toxicology (2020), Vol. 58, pp. 201	5.4.1 case b) Relevant but supplementary information: In this study, severe respiratory symptoms were also more frequently reported in the TA group. The surfactant properties of POEA are likely to cause aspiration pneumonitis which is a plausible explanation for the respiratory failure complicating severe GBF poisoning cases.
409	Larsen K. et al.	CA 5.3	2014	Effects of Sublethal Exposure to a Glyphosate-Based Herbicide Formulation on Metabolic Activities of Different Xenobiotic-Metabolizing Enzymes in Rats.	International journal of toxicology (2014), Vol. 33, No. 4, pp. 307	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo via drinking water (Roundup FULL II, 662 g/L potassium salt). Non-representative formulation for EU.
410	Larsen K. et al.	CA 5.8.2	2012	Effects of sub-lethal exposure of rats to the herbicide glyphosate in drinking water: glutathione transferase enzyme activities, levels of reduced glutathione and lipid peroxidation in liver, kidneys and small intestine.	Environmental toxicology and pharmacology (2012), Vol. 34, No. 3, pp. 811	5.4.1 case b) Relevant but supplementary information: Only 2 dose levels were used with only 4 animals per sex and per group. Effects were found on GSH in liver at sub-mg/kg bw dose levels which is not concordant with liver effects seen in regulatory toxicology studies performed at much higher dose levels. This publication is considered unreliable.
411	Larsson M. O. et al.	CA 6.9	2017	Quantifying dietary exposure to pesticide residues using spraying journal data	Food and Chemical Toxicology (2017), Vol. 105, pp. 407	5.4.1 case b) Relevant but supplementary information: Estimate of glyphosate exposure based on spray data in DK. Supplemental to risk assessment.
412	Larsson M. O. et al.	CA 6.9	2018	Refined assessment and perspectives on the cumulative risk resulting from the dietary exposure to pesticide residues in the Danish population	Food and Chemical Toxicology (2018), Vol. 111, pp. 207	5.4.1 case b) Relevant but supplementary information: Refined dietary risk assessment for Danish population. Supplementary to DRA included in submission.
413	La Verda N. L. et al.	CA 5.9.4	2015	Pesticide Exposures and Body Mass Index (BMI) of Pesticide Applicators From the Agricultural Health Study	Journal of Toxicology and Environmental Health, Part A: Current Issues (2015), Vol. 78, No. 20, pp. 1255	5.4.1 case b) Relevant but supplementary information: No relevant endpoint for risk assessment.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
414	Le Mer C. et al.	CA 8.2.1	2013	Effects of chronic exposures to the herbicides atrazine and glyphosate to larvae of the threespine stickleback (<i>Gasterosteus aculeatus</i>).	Ecotoxicology and environmental safety (2013), Vol. 89, pp. 174	5.4.1 case b) Relevant but supplementary information: The glyphosate analytical concentrations were highly variable, but overall based on the 2008 dataset, the mean measured values were within 25% of the nominal exposure concentrations. The sticklebacks were obtained from the natural environment and therefore prior exposure to chemicals cannot be discounted, although the fish were selected from the same location in two different years and achieved similar assay results in both years. The test system was considered robust based on the performance of the two positive control groups. Concerning the test design, the study was conducted according to methods described in Hahlbeck (2004). 'The juvenile threespined stickleback (<i>Gasterosteus aculeatus</i> L.) as a model organism for endocrine disruption: I. Sexual differentiation' whilst all available information is presented in this paper, the environmental conditions employed during the chronic exposure part of the test are not confirmed and validity criteria are not clearly stated. The achieved measured concentrations were also lower than is required for this study type and analysis in one of the two studies described was not complete. Whether the study was conducted according to GLP cannot be confirmed from the paper. Given some of the uncertainty over elements of the test design, the study should be considered unreliable.
415	Le Tien D. et al.	CA 5.5	2013	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize"	Food and Chemical Toxicology (2013), Vol. 53, pp. 443	5.4.1 case b) Relevant but supplementary information: Letter to the Editor; Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
416	Lebov J. F. et al.	CA 5.9.4	2015	Pesticide exposure and end-stage renal disease risk among wives of pesticide applicators in the Agricultural Health Study	Environmental Research (2015), Vol. 143, No. Part_A, pp. 198	5.4.1 case b) Relevant but supplementary information: Glyphosate was not associated with ESRD, but this study did not have the detail necessary to provide reliable information. Mostly speculative information about exposure to glyphosate and other pesticides. This publication is considered unreliable.
417	Leccia F. et al.	CA 8.3	2016	Disruption of the chemical communication of the European agrobiont ground-dwelling spider <i>Pardosa agrestis</i> by pesticides	Journal of applied entomology (2016), Vol. 140, No. 8, pp. 609	5.4.1 case b) Relevant but supplementary information: Endpoints based on the impact of chemicals on spider pheromones are not used/required in EU level ecotoxicological risk assessments.
418	Ledoux M. L. et al.	CA 6.10.1	2020	Penetration of glyphosate into the food supply and the incidental impact on the honey supply and bees.	Food Control (2020), Vol. 109, pp. 106859	5.4.1 case b) Relevant but supplementary information: This publication is a review and does not provide any original data, but summarizes relevant data on honey.
419	Lee B. K. et al.	CA 5.9.5	2012	Continuous renal replacement therapy in a patient with cardiac arrest after glyphosate-surfactant herbicide poisoning.	Hong Kong Journal of Emergency Medicine (2012), Vol. 19, No. 3, pp. 214	5.4.1 case b) Relevant but supplementary information: This is a report about multi-organ failure and the use of CVVHD after suicidal ingestion of formulated glyphosate and should not impact re-registration.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
420	Lee D. H. et al.	CA 5.9.5	2017	Severe glyphosate-surfactant intoxication: Successful treatment with continuous renal replacement therapy.	Hong Kong Journal of Emergency Medicine (2017), Vol. 24, No. 1, pp. 40	5.4.1 case b) Relevant but supplementary information: This is a report about multi-organ failure and the use of dialysis after suicidal ingestion of formulated glyphosate and should not impact re-registration.
421	Lee GaWon et al.	CA 5.2.1	2018	Glyphosate surfactant herbicide toxicosis in a dog with hindlimb paresis and urinary incontinence	Journal of Veterinary Clinics (2018), Vol. 35, No. 4, pp. 144	5.4.1 case b) Relevant but supplementary information: Acute Pet Exposure which should not impact the re-registration.
422	Lee M.-J. et al.	CA 5.9.2	2019	Hemodynamic changes after infusion of intravenous lipid emulsion to treat refractory hypotension caused by glyphosate-surfactant herbicide poisoning A case report.	Medicine (2019), Vol. 98, No. 3, pp. Article No.: e14156	5.4.1 case b) Relevant but supplementary information: This is an article describing the use of lipid emulsion in a suicidal overdose of formulated glyphosate. This has been well described in the literature as a possible intervention in critically ill patients.
423	Lee W. J. et al.	CA 5.9.5	2012	Incidence of acute occupational pesticide poisoning among male farmers in South Korea	American Journal of Industrial Medicine (2012), Vol. 55, No. 9, pp. 799	5.4.1 case b) Relevant but supplementary information: This article describes a survey performed to assess the incidence of pesticide poisoning in S. Korea. The researchers interviewed 1958 farmers and asked if they exhibited any of the 21 following symptoms: nausea, vomiting, diarrhoea, sore throat, runny nose, dyspnea, headache, dizziness, hyperactivity, profuse sweating, blurred vision, paresthesia, slurred speech, paralysis, chest pain, syncope, muscle weakness, skin irritation, eye irritation, lacrimation, and fatigue. Based on these answers they categorized the farmers into mild, moderate or severe occupational exposure categories. There were 26 formulated glyphosate exposures 17 mild and 9 moderate, with zero fatalities. Based on this self-reported exposure data, they made the following claim: "acute occupational pesticide poisoning was 24.7 (95% CI 22.1–27.2) per 100 male farmers, which corresponds to 209,512 cases across South Korea in 2010." This report supports the data that occupational exposure to glyphosate based products have a very low toxicity profile.
424	Lemma T. et al.	CA 5.8.2	2019	Disruption of giant unilamellar vesicles mimicking cell membranes induced by the pesticides glyphosate and picloram	Biophysical chemistry (2019), Vol. 250, pp. 106176	5.4.1 case b) Relevant but supplementary information: Novel assays and endpoints not applicable/reliable for risk assessment.
425	Lenkowski J. R. et al.	CA 8.1.4	2010	Low concentrations of atrazine, glyphosate, 2,4-dichlorophenoxyacetic acid, and triadimefon exposures have diverse effects on <i>Xenopus laevis</i> organ morphogenesis.	Journal of environmental sciences (2010), Vol. 22, No. 9, pp. 1305	5.4.1 case b) Relevant but supplementary information: Toxicity of glyphosate and other chemistry to amphibians to assess malformations, up to 5 mg/L. Static renewal at 24 hr in 48 hr study. Conducted in the US. No relevant endpoint generated for the glyphosate RA renewal.
426	Leon M. E. et al.	CA 5.9.4	2019	Pesticide use and risk of non-Hodgkin lymphoid malignancies in agricultural cohorts from France, Norway and the USA: a pooled analysis from the AGRICOH consortium.	International journal of epidemiology (2019), Vol. 1, No. 48, pp. 1519	5.4.1 case b) Relevant but supplementary information: Due to an error prone exposure methodology and the attendant inability to control confounding. We also note that the results for the Norwegian cohort conflict with the AHS results where exposure is determined more specifically and where there is no relationship between glyphosate and DLBCL among individuals in the highest exposed quartile (≥ 108 days). This publication is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
427	Li H. et al.	CA 7.1.1, CA 7.1.2	2016	Degradation and Isotope Source Tracking of Glyphosate and Aminomethylphosphonic Acid.	Journal of agricultural and food chemistry (2016), Vol. 64, No. 3, pp. 529	5.4.1 case b) Relevant but supplementary information: Provides information on the molecular mechanism of glyphosate degradation. No information relevant for route of degradation.
428	Li Jia et al.	CA 8.2	2017	Acute toxicity study of glyphosate and cyhalofop-butyl to <i>Daphnia carinata</i> .	Acta Prataculturae Sinica (2017), Vol. 26, No. 9, pp. 148	5.4.1 case b) Relevant but supplementary information: The herbicides evaluated in the study were a 41% glyphosate isopropylamine saline water agent. The study was not conducted according to GLP and the test substance source could not be verified. The authors state that glyphosate has an obvious dose-effect relation to the moving inhibition and fatality rate of <i>Daphnia carinatas</i> . The routinely used concentration of the two is significantly higher than the LC50 and is strongly toxic to <i>Daphnia carinatas</i> . However, given the lack of standard guidelines, an unclear method design and approach, as well as challenges in interpreting the study results make reaching any conclusions arising from the study challenging at best.
429	Li Jiao et al.	CA 8.2	2010	Acute Toxicity of Eight Pesticides on the Development of Sea Urchin Embryos.	Asian Journal of Ecotoxicology (2010), Vol. 5, No. 2, pp. 255	5.4.1 case b) Relevant but supplementary information: The study of the toxicity to the sea urchin embryos, was not conducted or based on a relevant guideline. Test concentrations were from 0.1 to 50 mg/L of glyphosate technical. The relationship between EC50 and LogP values was the main discussion of the article.
430	Liao L-H. et al.	CA 8.3.1	2017	Behavioral responses of honey bees (<i>Apis mellifera</i>) to natural and synthetic xenobiotics in food.	Scientific reports (2017), Vol. 7, No. 1, pp. 15924	5.4.1 case b) Relevant but supplementary information: Presented data based on preference behaviour of honey bees cannot be directly related to an EU level ecotoxicological risk assessment - may possibly be used to support a lack of effects despite evidence being based upon preference.
431	Liao Y. et al.	CA 6.9	2018	Validation and application of analytical method for glyphosate and glufosinate in foods by liquid chromatography-tandem mass spectrometry.	Journal of chromatography. A (2018), Vol. 1549, pp. 31	5.4.1 case b) Relevant but supplementary information: This is primarily an analytical method paper, but does include EU monitoring results on 136 food samples (only 2 residues detected).
432	Lieschova M. A. et al.	CA 5.3	2018	Combined effect of glyphosphate, saccharin and sodium benzoate on rats.	Regulatory Mechanisms in Biosystems (2018), Vol. 9, No. 4, pp. 591	5.4.1 case b) Relevant but supplementary information: Substantially lower water consumption in glyphosate only group confounds data and makes endpoint comparisons meaningless.
433	Lin JingWen et al.	CA 8.6	2015	Toxic effect of glyphosate on seed germination and seedling growth of Chinese fir.	Acta Agriculturae Universitatis Jiangxiensis (2015), Vol. 37, No. 5, pp. 843	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP, but it is well documented although no relevant guidelines have been followed. The authors state that the seed germination rate as well as the root length, stem length, leaf length and fresh weight of seedlings decreased significantly with the increase of glyphosate and the root length was more sensitive to glyphosate than other indexes. It was concluded that there is an inhibitory effect of glyphosate on Chinese fir seeds and seedlings, which led to antioxidant enzyme dysfunction, oxidative damage of cells and reduced chlorophyll synthesis. No analytical verification of the test item concentrations was performed, and the findings do not generate endpoints relevant to the regulatory risk assessment of glyphosate.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
434	Ling C. et al.	CA 5.9.4	2018	Prenatal Exposure to Ambient Pesticides and Preterm Birth and Term Low Birthweight in Agricultural Regions of California.	Toxics (2018), Vol. 6, No. 3, pp. E41	5.4.1 case b) Relevant but supplementary information: Unproven assumption that residence near land treated with pesticides equates to meaningful exposure. Glyphosate biomonitoring would suggest that is highly implausible. Also, residence on birth certificates is an uncertain indicator of residential proximity to treated land during pregnancy. This publication is considered unreliable.
435	Ling S. L. et al.	CA 5.9.5	2018	Workplace chemical and toxin exposures reported to a Poisons Information Centre: A diverse range causing variable morbidity.	European Journal of Emergency Medicine (2018), Vol. 25, No. 2, pp. 134	5.4.1 case b) Relevant but supplementary information: This article describes the characteristics of toxin/chemical exposures reported to an Australian poison center. Glyphosate is mentioned in 1 table only with no description of effects.
436	Liu Xiao-wei et al.	CA 8.2.4.2, CA 8.2.5.2	2012	Toxicological effect of paraquat and glyphosate on cladoceran Moina macrocopa.	Shengtaixue Zazhi (2012), Vol. 31, No. 8, pp. 1984	5.4.1 case b) Relevant but supplementary information: The conclusions are unclear based on several factors including the impact of the density of the algal food source and the temperature of the test media. This study is not adequately described – for example, water quality / environmental conditions cannot be confirmed from the paper, there were no validity criteria stated and no analytical verification of exposure concentrations was undertaken. Given the uncertainty over the test design and the procedures undertaken and the fact that the study was not conducted according to a recognised test guideline relevant for the EU risk assessment, the test is considered as unreliable.
437	Lopez Gonzalez E. C. et al.	CA 5.4	2017	Micronuclei and other nuclear abnormalities on Caiman latirostris (Broad-snouted caiman) hatchlings after embryonic exposure to different pesticide formulations.	Ecotoxicology and environmental safety (2017), Vol. 136, pp. 84	5.4.1 case b) Relevant but supplementary information: This study looks at the impact of pesticide formulations on the nuclear developments of Caimen embryos via topical application to their eggs shells after laying. The endpoints achieved cannot be related to EU risk assessment.
438	Lu Li-li et al.	CA 8.3.2, CP 10.3.2	2010	Effects of glyphosate on the growth and development of Agasicles hygrophila	Huanan Nongye Daxue Xuebao (2010), Vol. 31, pp. 22	5.4.1 case b) Relevant but supplementary information: The test substance is 41% glyphosate IP A salt. The study on Agasicles hygrophila was not conducted or based on a relevant NTA guideline.
439	Lugowska K.	CA 8.2.2.1, CP 10.2.3	2018	The effects of Roundup on gametes and early development of common carp (Cyprinus carpio L)	Fish physiology and biochemistry (2018), Vol. 44, No. 4, pp. 1109	5.4.1 case b) Relevant but supplementary information: The material and methods part of the study lack some important information. The preparation of test solutions is missing. The time course of the experiment is unclear. Furthermore, there was no analytical verification of test concentrations reported. Suitable exposure throughout the study was not demonstrated and thus the reliability of the study is questionable. The performance / validity of the test cannot be confirmed as there was no positive control included validity criteria were not stated. No regulatory endpoint useful for risk assessment is given. The study is not to a guideline and is not GLP.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
440	Luo W. et al.	CA 5.9.5	2019	Surgical treatment of pyloric stenosis caused by glyphosate poisoning. A case report.	Medicine (2019), Vol. 98, No. 30, pp. e16590	5.4.1 case b) Relevant but supplementary information: This article describes a case report of gastric ulceration and swelling causing pyloric obstruction in a patient who ingested formulated glyphosate. This is not unexpected as formulations contain surfactants which can cause caustic injury to the GI tract with suicidal ingestions. This should not impact re-registration.
441	Mahendrakar K. et al.	CA 5.9.5	2014	Glyphosate surfactant herbicide poisoning and management.	Indian journal of critical care medicine (2014), Vol. 18, No. 5, pp. 328	5.4.1 case b) Relevant but supplementary information: ILE has been proposed as a possible therapy for formulated glyphosate overdoses.
442	Maillard E. et al.	CA 7.5	2012	Removal of dissolved pesticide mixtures by a stormwater wetland receiving runoff from a vineyard catchment: an inter-annual comparison	International journal of environmental analytical chemistry (2012), Vol. 92, No. 8, pp. 979	5.4.1 case b) Relevant but supplementary information: Confirmatory data showing storm water wetlands removed glyphosate/AMPA from agricultural runoff.
443	Mailier R. et al.	CA 7.5	2014	Biofiltration vs conventional activated sludge plants: what about priority and emerging pollutants removal?	Environmental Science and Pollution Research (2014), Vol. 21, No. 8, pp. 5379	5.4.1 case b) Relevant but supplementary information: Paper compares glyphosate removal in waste water treatment by two primary and two biological treatments.
444	Malhotra R. C. et al.	CA 5.9	2010	Glyphosate-surfactant herbicide-induced reversible encephalopathy.	Journal of clinical neuroscience (2010), Vol. 17, No. 11, pp. 1472	5.4.1 case b) Relevant but supplementary information: This paper describes prolonged encephalopathy in a suicidal glyphosate ingestion. There is no mention of the medication that was used for sedation while the patient was intubated in the ICU. Accumulations of lorazepam and other sedatives may result in prolonged coma. In formulated glyphosate overdose with multi-organ failure it is common to sedate patients until their haemodynamics improve. As this document encompasses suicidal overdose, this paper should not impact re-registration.
445	Mandiki S. N. M. et al.	CA 7.5	2014	Effect of land use on pollution status and risk of fish endocrine disruption in small farmland ponds	Hydrobiologia (2014), Vol. 723, No. 1, pp. 103	5.4.1 case b) Relevant but supplementary information: Provides glyphosate concentrations in 15 Belgian ponds in different seasons and different land uses. End-points cannot be used directly in the risk assessment for the renewal of glyphosate at EU level. Only summary glyphosate concentrations available.
446	Manfo F. P. T. et al.	CA 5.6	2012	Effect of agropesticides use on male reproductive function: A study on farmers in Djutisa (Cameroon)	Environmental Toxicology (2012), Vol. 27, No. 7, pp. 423	5.4.1 case b) Relevant but supplementary information: No glyphosate specific conclusions, confounded due to multiple pesticide uses.
447	Maqueda C. et al.	CA 7.1.3.1.1, CA 7.2.1.3	2017	Behaviour of glyphosate in a reservoir and the surrounding agricultural soils.	The Science of the total environment (2017), Vol. 593-594, pp. 787	5.4.1 case b) Relevant but supplementary information: Confirmatory data on sorption and water/sediment behaviour and natural water photolysis of glyphosate.
448	Mariager T. P. et al.	CA 5.9.2	2013	Severe adverse effects related to dermal exposure to a glyphosate-surfactant herbicide.	Clinical toxicology (2013), Vol. 51, No. 2, pp. 111	5.4.1 case b) Relevant but supplementary information: No new effects are discussed in the publication. Adverse effects of formulations in case of dermal exposure are well known. The data should not impact the re-registration.
449	McClellan R. O.	CA 5.5	2016	Evaluating the potential carcinogenic hazard of glyphosate.	Critical reviews in toxicology (2016), Vol. 46, No. sup1, pp. 1	5.4.1 case b) Relevant but supplementary information: Forward by Editor in Chief to a special edition on glyphosate in Critical Reviews in Toxicology.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
450	McQueen H. et al.	CA 6.9	2012	Estimating maternal and prenatal exposure to glyphosate in the community setting.	International journal of hygiene and environmental health (2012), Vol. 215, No. 6, pp. 570	5.4.1 case b) Relevant but supplementary information: Study estimated dietary exposure of pregnant women to glyphosate by survey and food analysis. Exposure is well within the National Estimated Daily Intake.
451	Mesnage R. et al.	CA 5.5	2017	Multionics reveal non-alcoholic fatty liver disease in rats following chronic exposure to an ultra-low dose of Roundup herbicide.	Scientific reports (2017), Vol. 7, pp. 39328	5.4.1 case b) Relevant but supplementary information: Formulation tested (Roundup, composition not described). Livers obtained from research of republished retreated Seralini rat study.
452	Mesnage R. et al.	CA 5.8	2013	Ethoxylated adjuvants of glyphosate-based herbicides are active principles of human cell toxicity.	Toxicology (2013), Vol. 313, No. 2-3, pp. 122	5.4.1 case b) Relevant but supplementary information: Formulations, surfactants and glyphosate tested in vitro. Effects attributable to surfactant cytotoxicity.
453	Mesnage R. et al.	CA 5.8	2017	Facts and Fallacies in the Debate on Glyphosate Toxicity.	Frontiers in public health (2017), Vol. 5, pp. 316	5.4.1 case b) Relevant but supplementary information: review, secondary source.
454	Mesnage R. et al.	CA 5.8	2014	Major pesticides are more toxic to human cells than their declared active principles.	BioMed research international (2014), Vol. 2014, pp. 179691	5.4.1 case b) Relevant but supplementary information: In vitro cytotoxicity data at high doses not informative for hazard characterization.
455	Mesnage R. et al.	CA 5.8.2	2015	Potential toxic effects of glyphosate and its commercial formulations below regulatory limits.	Food and chemical toxicology (2015), Vol. 84, pp. 133	5.4.1 case b) Relevant but supplementary information: review, secondary source.
456	Mesnage R. et al.	CA 5.9.1	2012	Glyphosate exposure in a farmer's family.	Journal of Environmental Protection (2012), Vol. 3, No. 9, pp. 1001	5.4.1 case b) Relevant but supplementary information: Glyphosate measured in urine of farmer and family.
457	Milesi M. M. et al.	CA 5.6.1	2018	Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Archives of toxicology (2018), Vol. 92, No. 8, pp. 2629	5.4.1 case b) Relevant but supplementary information: Glyphosate based herbicide (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.
458	Milesi M. M. et al.	CA 5.6.1	2019	Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Archives of toxicology (2019), Vol. 93, No. 12, pp. 3635	5.4.1 case b) Relevant but supplementary information: Glyphosate based herbicide (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.
459	Mills P. J. et al.	CA 5.9.1	2017	Excretion of the Herbicide Glyphosate in Older Adults Between 1993 and 2016.	Journal of the American Medical Association (2017), Vol. 318, No. 16, pp. 1610	5.4.1 case b) Relevant but supplementary information: Not relevant for EU toxicology risk assessment but supplementary information on human exposure.
460	Mills P. J. et al.	CA 5.9.1	2018	Excretion of the herbicide glyphosate in older adults between 1993 and 2016 (vol 318, pg 1610, 2017)	Journal of the American Medical Association (2018), Vol. 319, No. 13, pp. 1386	5.4.1 case b) Relevant but supplementary information: Correction to Mills et al. 2017, Journal of the American Medical Association (2017), Vol. 318, No. 16, pp. 1610-1611.
461	Mills P. J. et al.	CA 5.9.2	2018	Erratum: Excretion of the herbicide glyphosate in older adults between 1993 and 2016.	Journal of the American Medical Association (2018), Vol. 319, No. 13, pp. 1386	5.4.1 case b) Relevant but supplementary information: Erratum listing undisclosed conflicts of interest on a previous paper, Mills 2017, Journal of the American Medical Association (2017), Vol. 318, No. 16, pp. 1610-1611.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
462	Mills P. J. et al.	CA 5.9.2	2020	Glyphosate Excretion is Associated With Steatohepatitis and Advanced Liver Fibrosis in Patients With Fatty Liver Disease.	Clinical gastroenterology and hepatology (2020), Vol. 8, pp. 741	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment. This paper should not impact the re-registration.
463	Mills P. J. et al.	CA 5.9.2	2018	Undisclosed conflicts of interest	Journal of the American Medical Association (2018), Vol. 319, No. 13, pp. 1386	5.4.1 case b) Relevant but supplementary information: Correction to Mills et al. 2017, Journal of the American Medical Association 2017, Vol. 318, No. 16, pp. 1610-1611.
464	Mink P. J. et al.	CA 5.9.4	2011	Epidemiologic studies of glyphosate and non-cancer health outcomes: a review.	Regulatory toxicology and pharmacology (2011), Vol. 61, No. 2, pp. 172	5.4.1 case b) Relevant but supplementary information: This is an epidemiology review article on non-cancer endpoints.
465	Mink P. J. et al.	CA 5.9.4	2012	Epidemiologic studies of glyphosate and cancer: a review.	Regulatory toxicology and pharmacology (2012), Vol. 63, No. 3, pp. 440	5.4.1 case b) Relevant but supplementary information: review, secondary source.
466	Mise M.	CA 5.9.4	2011	Epidemiological study of glyphosate herbicide poisoning.	The Japanese journal of toxicology (2011), Vol. 24, No. 1, pp. 69	5.4.1 case b) Relevant but supplementary information: Epidemiological analysis of acute poisoning cases due to oral ingestion of glyphosate (suicide attempts), clinical symptoms such as metabolic acidosis, hyperkalemia, electrocardiogram abnormalities are known effects and should not impact the re-registration.
467	Mohamed F. et al.	CA 5.9.5	2016	Mechanism-specific injury biomarkers predict nephrotoxicity early following glyphosate surfactant herbicide (GPSH) poisoning.	Toxicology letters (2016), Vol. 258, pp. 1	5.4.1 case b) Relevant but supplementary information: This article discusses the use of biomarkers to predict kidney injury in formulated glyphosate overdose and predictors of nephrotoxicity in suicidal ingestions and therefore should not impact registration decisions.
468	Mohamed I. A-w. et al.	CA 8.2.8	2016	Unique efficacy of certain novel herbicides against Culex pipiens (Diptera: Culicidae) mosquito under laboratory conditions	Advances in Environmental Biology (2016), Vol. 10, No. 8, pp. 104	5.4.1 case b) Relevant but supplementary information: Important information is missing in the material and methods section. The preparation and application of the test solutions as well as the tested concentration range were not reported. The test items were not adequately specified. It is not clear whether the test concentrations refer to the product or to the active substance. Moreover one active ingredient is given as glyphosate isopropylamine which should be formulated as a salt resulting in test concentrations as acid equivalents. In addition, the biological results of the test were not sufficiently stated. No mortality data for the test concentrations nor for the controls was given to evaluate the results. Furthermore, there was no analytical verification of test concentrations reported. The study is not to a guideline and is not GLP. The study is considered unreliable.
469	Moon J. M. et al.	CA 5.9	2010	Predicting acute complicated glyphosate intoxication in the emergency department.	Clinical toxicology (2010), Vol. 48, No. 7, pp. 718	5.4.1 case b) Relevant but supplementary information: The results of this study showed that age > 50 years, X-ray abnormalities, and ALT > 40 U/L were significant predictive factors for complications in patients with glyphosate surfactant herbicide poisoning: patients with these findings might require admission to the intensive care unit.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
470	Moon J. M. et al.	CA 5.9.2	2018	Cardiovascular Effects and Fatality May Differ According to the Formulation of Glyphosate Salt Herbicide.	Cardiovascular toxicology (2018), Vol. 18, No. 1, pp. 99	5.4.1 case b) Relevant but supplementary information: Preliminary results without investigation of other factors contributing to such effects.
471	Moon J. M. et al.	CA 5.9.5	2016	The characteristics of emergency department presentations related to acute herbicide or insecticide poisoning in South Korea between 2011 and 2014.	Journal of toxicology and environmental health. Part A (2016), Vol. 79, No. 11, pp. 466	5.4.1 case b) Relevant but supplementary information: This study showed a decrease in the case fatality rate of suicidal pesticide ingestions between 2011-2014 in South Korea. This clearly demonstrates that herbicides with a lower acute toxicity profile are associated with lower mortality in suicidal ingestions.
472	Mottier A. et al.	CA 8.2.8	2013	Effects of glyphosate-based herbicides on embryo-larval development and metamorphosis in the Pacific oyster, <i>Crassostrea gigas</i> .	Aquatic toxicology (2013), Vol. 128-129, pp. 67	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP and/or according to a recognized test guideline and there are no validity criteria presented. The authors state that the EC50 values computed for the embryotoxicity tests with glyphosate and AMPA were lower than the values reported for regulatory model organisms. The embryotoxicity test appeared more sensitive but also a little more difficult to assess compared to the metamorphosis assay. Given the limitations cited, the study is considered unreliable.
473	Mueller U. et al.	CA 5.9.1	2012	Comment on "Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada".	Reproductive Toxicology (2012), Vol. 33, No. 3, pp. 401	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comments on Aris et al. 2011, Reprod. Toxicol (2011), Vol. 31, pp. 528-533.
474	Munz N. et al.	CA 7.5	2012	Pesticide measurements in watercourses	Aqua & Gas (2012), Vol. 92, No. 11, pp. 32	5.4.1 case b) Relevant but supplementary information: Describes evaluation of concentrations of glyphosate and other PPP's and biocides from flowing water bodies of different sizes in Switzerland. Total 545 sites (32 sites for glyphosate). Only data presented is Maximum and Mean concentrations across all sites.
475	Muskus A. M. et al.	CA 7.1.1.1, CA 7.1.2.1.1	2019	Effect of temperature, pH and total organic carbon variations on microbial turnover of (13)C3(15)N-glyphosate in agricultural soil.	The Science of the total environment (2019), Vol. 658, pp. 697	5.4.1 case b) Relevant but supplementary information: Study of effect of temperature, soil pH, total organic carbon on degradation of 13C and 15N glyphosate to nonextractable residues. Study conducted in Germany. Provides supplemental information as non-extractable residues are not directly considered in the risk assessment.
476	Mutzner L. et al.	CA 7.5	2016	Model-based screening for critical wet-weather discharges related to micropollutants from urban areas.	Water research (2016), Vol. 104, pp. 547	5.4.1 case b) Relevant but supplementary information: Model to predict glyphosate concentration from storm water outlets and combined sewer overflows. Glyphosate does not exceed EQS based on conservative modeling. Not directly relevant for risk assessment but useful information.
477	Nakae H. et al.	CA 5.9.5	2015	Paralytic ileus induced by glyphosate intoxication successfully treated using Kambo medicine.	Acute medicine & surgery (2015), Vol. 2, No. 3, pp. 214	5.4.1 case b) Relevant but supplementary information: This article describes alternative medicine therapies that were used to treat a Japanese woman with a paralytic ileus after glyphosate ingestion. It is not uncommon for patients in a critical care setting to develop an ileus. These tend to resolve on their own without intervention. I cannot be commented on whether this intervention increases GI motility.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
478	Nakayama T. et al.	CA 5.9.5	2019	Renal cortical hypoperfusion caused by glyphosate-surfactant herbicide.	Clinical and experimental nephrology (2019), Vol. 23, No. 6, pp. 865	5.4.1 case b) Relevant but supplementary information: This was a suicidal ingestion of formulated glyphosate that resulted in poor renal perfusion & multiorgan failure. Since this was a suicidal ingestion, the outcome is not unexpected and should not impact the re-registration.
479	Nathan V. K. et al.	CA 8.5	2020	Pesticide application inhibit the microbial carbonic anhydrase-mediated carbon sequestration in a soil microcosm.	Environmental science and pollution research international (2020), Vol. 27, pp. 4468	5.4.1 case b) Relevant but supplementary information: Endpoints presented are not relevant to the direct effects assessment required for Annex I renewal. However, it does inform in other areas, e.g biodiversity / benefits of glyphosate use.
480	Nedoptianska N. M.	CA 5.5	2011	Problem of the carcinogenic danger of glyphosate; new data	Sovremennyye Problemy Toksikologii (2011) No. 1-2, pp.5	5.4.1 case b) Relevant but supplementary information: review, secondary source.
481	Nevius B. A. et al.	CA 8.4.2	2012	Surface-functionalization effects on uptake of fluorescent polystyrene nanoparticles by model biofilms.	Ecotoxicology (2012), Vol. 21, No. 8, pp. 2205	5.4.1 case b) Relevant but supplementary information: This paper discusses the results of an earthworm avoidance study which is not an endpoint type used in EU level risk assessment for Annex I renewal. Therefore it is considered to be supplementary. No effects were observed for glyphosate exposure.
482	Nguyen N. K. et al.	CA 7.1.2.1.1	2018	Large variation in glyphosate mineralization in 21 different agricultural soils explained by soil properties.	The Science of the total environment (2018), Vol. 627, pp. 544	5.4.1 case b) Relevant but supplementary information: Study of 21 European soils to determine factors influencing glyphosate mineralization. Exchangeable acidity identified as only univariate factor with negative correlation. NaOH extractable residues have strong negative correlation with glyphosate mineralization. Doesn't fit risk assessment directly but provides useful information.
483	Niemann L. et al.	CA 5.9.2	2015	A critical review of glyphosate findings in human urine samples and comparison with the exposure of operators and consumers.	Journal fuer Verbraucherschutz und Lebensmittelsicherheit/Journal of Consumer Protection and Food Safety (2015), Vol. 10, No. 1, pp. 3	5.4.1 case b) Relevant but supplementary information: review, secondary source.
484	Nunez S. et al.	CA 8.5	2015	In vitro effect of N-(phosphonomethyl) glycine agrochemicals on total heterotrophic bacteria and azotobacter chroococcum.	Biocell (2015), Vol. 39, Suppl. 1. Abstract No.: A71.	5.4.1 case b) Relevant but supplementary information: Endpoints based on the effects of glyphosate on bacteria in soil are not considered in the EU level ecotox risk assessment for Annex I renewal.
485	Okada E. et al.	CA 7.1.3.1.1, CA 7.1.4.1.1	2016	Adsorption and mobility of glyphosate in different soils under no-till and conventional tillage.	Geoderma (2016), Vol. 263, pp. 78	5.4.1 case b) Relevant but supplementary information: Soil adsorption data for glyphosate are reported but they are well within the numbers provided in the dossier.
486	Ollivier L.	CA 5.5	2013	A Comment on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Food and Chemical Toxicology (2013), Vol. 53, pp. 458	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012 Food Chemical Toxicol (2012), retracted
487	Ololade I. A. et al.	CA 7.1.3	2014	Sorption of Glyphosate on Soil Components: The Roles of Metal Oxides and Organic Materials	Soil & sediment contamination (2014), Vol. 23, No. 5, pp. 571	5.4.1 case b) Relevant but supplementary information: No new data presented, therefore supplementary. This publication is also considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
488	Ordóñez J. et al.	CA 5.9.5	2013	Non-Ethanol hyperlipasemia in toxicology consultation.	Clinical Toxicology (2013), Vol. 51, No. 7, pp. 703	5.4.1 case b) Relevant but supplementary information: This is a case series looking at the toxic causes of pancreatitis in overdose patients. One of whom had ingested formulated glyphosate. This should not impact re-registration.
489	Owagboriaye F. et al.	CA 5.8.2	2019	Comparative studies on endogenic stress hormones, antioxidant, biochemical and hematological status of metabolic disturbance in albino rat exposed to roundup herbicide and its active ingredient glyphosate.	Environmental science and pollution research international (2019), Vol. 26, No. 14, pp. 14502	5.4.1 case b) Relevant but supplementary information: Purity not reported. Test species are not clearly and completely described. Insufficient information is given on the biochemical methods used. This publication is considered unreliable.
490	Owagboriaye F. O. et al.	CA 5.6	2017	Reproductive toxicity of Roundup herbicide exposure in male albino rat.	Experimental and toxicologic pathology (2017), Vol. 69, No. 7, pp. 461	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo (Roundup 441 g/L potassium salt, 360 g/L a.e.).
491	Ozaki T. et al.	CA 5.9.5	2017	Severe Glyphosate-Surfactant Intoxication Successfully Treated With Continuous Hemodiafiltration and Direct Hemoperfusion: Case Report.	Therapeutic apheresis and dialysis (2017), Vol. 21, No. 3, pp. 296	5.4.1 case b) Relevant but supplementary information: This article discusses the use of haemodialysis and haemofiltration in formulated glyphosate overdoses. This article discusses medical management of suicidal ingestions and therefore should not impact registration decisions.
492	Ozbay B. et al.	CA 7.1.3.1.1	2018	Sorption and desorption behaviours of 2,4-D and glyphosate in calcareous soil from Antalya, Turkey	Water and environment journal (2018), Vol. 32, No. 1, pp. 141	5.4.1 case b) Relevant but supplementary information: Test soil was selected to be representative for the region of Antalya, Turkey. The use of oven-dried soil is considered not appropriate for the risk assessment.
493	Padilla J. T. et al.	CA 7.1.3.1.1	2019	Interactions among Glyphosate and Phosphate in Soils: Laboratory Retention and Transport Studies.	Journal of environmental quality (2019), Vol. 48, No. 1, pp. 156	5.4.1 case b) Relevant but supplementary information: Study conducted with U.S. soils but shows that Kf values of glyphosate are lower in the presence of phosphate. Addition of phosphate also impacts glyphosate movement in soil columns. Kf values are in range of previously reported.
494	Paganelli A. et al.	CA 8.1.5	2010	Glyphosate-based herbicides produce teratogenic effects on vertebrates by impairing retinoic acid signaling.	Chemical research in toxicology (2010), Vol. 23, No. 10, pp. 1586	5.4.1 case b) Relevant but supplementary information: Study to look at the effect of glyphosate product on the developmental effects of xenopus laevis embryos. Glyphosate injected into embryos. No relevant endpoint generated for the regulatory risk assessment of glyphosate renewal. High concentrations, unrealistic route of exposure. Conducted in Argentina.
495	Palli E. et al.	CA 5.9.2	2011	Rapture of the large intestine caused by severe oral glyphosate-surfactant intoxication.	The American journal of emergency medicine (2011), Vol. 29, No. 4, pp. 459	5.4.1 case b) Relevant but supplementary information: This article describes corrosive injury to the transverse colon in a suicidal ingestion of formulated glyphosate. This is known to occur in suicidal overdoses and should not impact re-registration
496	Palma G.	CA 5.8.3	2011	Letter to the editor regarding the article by Paganelli et al.	Chemical research in toxicology (2011), Vol. 24, No. 6, pp. 775	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, reply to Paganelli et al., 2010, Chem. Res. Toxicol. (2010), Vol. 23, pp. 1586-1595.

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497	Pan LiPing et al.	CA 5.9	2016	Analysis of liver index of workers exposed to glyphosate	Journal of Environmental & Occupational Medicine (2016), Vol. 33, No. 4, pp. 380	5.4.1 case b) Relevant but supplementary information: This article examined the liver function in 345 workers exposed to glyphosate through manufacturing and 345 controls. The sample size is small, and it was claimed that there was a statistically significant difference between cholinesterase levels between groups. This is not related to glyphosate as it is not a cholinesterase inhibitor. It was also found that there were markers of liver pathology on ultrasound, which wouldn't be related to glyphosate as this has been extensively evaluated through GLP studies.
498	Pandey A. et al.	CA 5.8.3	2015	Analysis of endocrine disruption effect of Roundup® in adrenal gland of male rats.	Toxicology reports (2015), Vol. 2, pp. 1075	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo (Roundup, 41%, India).
499	Pandey P. et al.	CA 7.1.3.1.1	2019	Assessing Glyphosate and Fluridone Concentrations in Water Column and Sediment Leachate.	Frontiers in Environmental Science (2019), Vol. 7, pp. Article No.: 22	5.4.1 case b) Relevant but supplementary information: This U.S. study was aimed to improve the existing understanding of the deposition of herbicides from water column to bed sediment and leachate of herbicides from bed sediment to water column. The study was prompted by herbicide treatment of water for aquatic weeds. Results may provide useful information although not directly relevant for EU risk assessment.
500	Panettieri M. et al.	CA 8.6	2013	Glyphosate effect on soil biochemical properties under conservation tillage	Soil & tillage research (2013), Vol. 133, pp. 16	5.4.1 case b) Relevant but supplementary information: The paper describes different tillage techniques following use of glyphosate and the impact on soil properties. Not relateable directly to risk assessment for renewal but may be useful in the biodiversity and benefits discussions.
501	Panetto O. S. et al.	CA 8.2.2	2019	The effects of Roundup® in embryo development and energy metabolism of the zebrafish (Danio rerio)	Comparative biochemistry and physiology (2019), Vol. 222, pp. 74	5.4.1 case b) Relevant but supplementary information: The acute 96 hour-LC50 for zebrafish embryo after exposure to Roundup was determined to be 58.3 mg/L. Seven test concentrations between 3.5 and 350 mg/L were used with 4 replicates and 20 embryos each. It was stated that the test was performed based on OECD guideline 236. This study type has six validity criteria for the control group, including fertilization rate success (required ≥70% in batch tested), hatching rate at 96 hours (required ≥80%) and overall survival (required ≥90%). There is also a validity criteria requirement for the results of a positive control group, using 3, 4-dichloroaniline, to achieve a minimum of 30% mortality at 96 hours. There are also two water quality criteria relating to water temperature (required 26 ± 1 °C at any time during the test) and for dissolved oxygen at 96 hours to be > 80% of the saturation. Whilst dissolved oxygen levels at 6 mg O2/L were achieved in the test, the temperature was outside of the validity criteria limits, being maintained at 28 ± 1 °C for the study duration. Therefore the dissolved oxygen level cannot be confirmed as reporting of dissolved oxygen in terms of mg O2/L requires information on atmospheric pressure and temperature to resolve actual dissolved oxygen in terms of percentage saturation. A slight increase in temperature by a degree Celsius is not overly concerning.

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						however, it is difficult to conclude on the reliability of the study as only one other validity criteria is mentioned, with respect to control survival, with 2% mortality achieved in the controls. There is no information presented on the fertilization rate of the batch of eggs used, nor is there hatching rates presented for the controls or the treatment groups. In addition, the performance of the test system cannot be confirmed as the results of a positive control group were not included. In addition, there are no biological data for the treatment groups presented other than in figures, so the data in the figures cannot be confirmed. Furthermore, claims that the achieved LC50 of 58.3 mg/L is 15,000 times lower than that used in agriculture is not supported by corresponding surface water monitoring data. A final point is that the test concentrations in the test system were not analytically verified and therefore, exposure concentrations cannot be confirmed. The study is considered unreliable.
502	Panwen M. et al.	CA 8.2.8, CP 10.2.1	2013	Acute toxicity of pesticides glyphosate and paraquat on river snails	Siliao Yanjiu (2013) No. 11, pp. 44	5.4.1 case b) Relevant but supplementary information: The material and methods sections lack important information. The test organisms were not specified. Detailed information on preparation and application of test solution is missing. The tested concentrations and the exposure time were not reported in the material and methods. The test item is not specified. It is only stated that it contains 10 % active ingredient, but other ingredients are unknown. No control results are available. Furthermore, it is unclear whether the reported endpoints refer to the active substance or to the product. No analytical verification of test concentrations were performed. The study is considered unreliable.
503	Paradelo M. et al.	CA 7.1.3.1.1	2015	Prediction of the glyphosate sorption coefficient across two loamy agricultural fields	Geoderma (2015), Vol. 259-260, pp. 224	5.4.1 case b) Relevant but supplementary information: Study of 9 soil factors influencing glyphosate sorption in 2 different fields. Not related to an efate guideline, but supplementary information.
504	Pareja L. et al.	CA 6.10.1	2019	Evaluation of glyphosate and AMPA in honey by water extraction followed by ion chromatography mass spectrometry. A pilot monitoring study	Analytical methods (2019), Vol. 11, No. 16, pp. 2123	5.4.1 case b) Relevant but supplementary information: This is primarily an analytical method paper, but does include information on analysis of collected samples.
505	Park J-S. et al.	CA 5.9	2013	Incidence, etiology, and outcomes of rhabdomyolysis in a single tertiary referral center	Journal of Korean Medical Science (2013), Vol. 28, No. 8, pp. 1194	5.4.1 case b) Relevant but supplementary information: This article only mentions glyphosate in the reference section. One reference specifically discusses rhabdomyolysis with intramuscular injection of formulated glyphosate.
506	Park S. et al.	CA 5.9.5	2016	Concurrent Hemoperfusion and Hemodialysis in Patients with Acute Pesticide Intoxication.	Blood Purification (2016), Vol. 42, No. 4, pp. 329	5.4.1 case b) Relevant but supplementary information: This article describes the use of hemodialysis and hemoperfusion in pesticide overdoses. Out of 383 pesticide ingestions 110 were glyphosate formulations. Of the 80 deaths reported 12 of them were glyphosate. This article is describing a possibly beneficial modality of treating severe pesticide overdose and should not impact re-registration.

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507	Parks C. G. et al.	CA 5.9.4	2016	Rheumatoid Arthritis in Agricultural Health Study Spouses: Associations with Pesticides and Other Farm Exposures.	Environmental health perspectives (2016), Vol. 124, No. 11, pp. 1728	5.4.1 case b) Relevant but supplementary information: Lack of information about glyphosate frequency of use and timing of use. This publication is considered unreliable.
508	Parvez S. et al.	CA 5.9.4	2018	Glyphosate exposure in pregnancy and shortened gestational length: a prospective Indiana birth cohort study	Environmental Health (2018), Vol. 17, pp. 23/1	5.4.1 case b) Relevant but supplementary information: Small study. Uncertain exposure characterization. Premature births were 1 of 5 for those with glyphosate < LOD and 1 of 66 for those with glyphosate > LOD. This suggests no evidence of glyphosate being related to preterm birth. This publication is considered unreliable.
509	Pasini R. A. et al.	CA 8.3	2018	Comparative selectivity of herbicides used in wheat crop on the predators Chrysoperla externa and Eriopsis connexa	Planta Daninha (2018), Vol. 36, pp. E018179968	5.4.1 case b) Relevant but supplementary information: In the material and methods section important information is missing. The test items were not adequately specified regarding the content of the active ingredient. It is unclear whether the given active ingredient concentration in the spray solution corresponds to the content of the active ingredient in the formulation. The test did not follow a specific test guideline, although the culturing of the insects was conducted according to recognised approaches. There were no validity criteria established and the performance of the assays was not assessed using a positive control substance. An endpoint that could be used in an ecotoxicology risk assessment was not established.
510	Paudel P. et al.	CA 7.2.1	2015	Birnessite-Catalyzed Degradation of Glyphosate: A Mechanistic Study Aided by Kinetics Batch Studies and NMR Spectroscopy.	Soil Science Society of America Journal (2015), Vol. 79, No. 3, pp. 815	5.4.1 case b) Relevant but supplementary information: No relevant information on environmental fate included but a new abiotic (birnessite) degradation of glyphosate is discussed.
511	Pereira P. C. et al.	CA 8.2.7	2019	Acute Toxicity of Herbicides and Sensibility of Aquatic Plant Wolffia brasiliensis as a Bioindicator Organism	Planta Daninha (2019), Vol. 37, pp. e019201636	5.4.1 case b) Relevant but supplementary information: This paper describes a non-standard aquatic plant ecotoxicity test for a non-EU native species, and is therefore difficult to relate to an EU level ecotox risk assessment. The formulation used is specific to aquatic applications that are not on the proposed GAP for the renewal.
512	Perry M. J. et al.	CA 5.9.4	2019	Historical evidence of glyphosate exposure from a US agricultural cohort	Environmental Health (2019), Vol. 18, No. 1, pp. 42	5.4.1 case b) Relevant but supplementary information: The study population, the sampling and the method of analysis along with its validation are not sufficiently documented. This publication is considered unreliable.
513	Petersen C. T. et al.	CA 7.1.4.3, CA 7.5	2011	Comments on "Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils".	Chemosphere (2011), Vol. 85, No. 9, pp. 1538	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, comment on Kjaer et al_2011, Chemosphere (2011), Vol. 84, No. 4, pp. 471-479.
514	Picetti E. et al.	CA 5.9.5	2017	Glyphosate ingestion causing multiple organ failure: A near-fatal case report.	Acta Biomedica (2017), Vol. 88, No. 4, pp. 533	5.4.1 case b) Relevant but supplementary information: This is a report about multi-organ failure after suicidal ingestion of formulated glyphosate and should not impact re-registration.
515	Pinto C. L. et al.	CA 5.8.3	2018	Identification of candidate reference chemicals for in vitro steroidogenesis assays	Toxicology In Vitro (2018), Vol. 47, pp. 103	5.4.1 case b) Relevant but supplementary information: review, secondary source.

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516	Piotrowicz-Cieslak A. I. et al.	CA 8.6	2010	Different Glyphosate Phytotoxicity of Seeds and Seedlings of Selected Plant Species.	Polish Journal of Environmental Studies (2010), Vol. 19, No. 1, pp. 123	5.4.1 case b) Relevant but supplementary information: Study to compare the effect of glyphosate on plant growth parameters of 6 plant species.
517	Planche V. et al.	CA 5.9.5	2019	Acute toxic limbic encephalopathy following glyphosate intoxication.	Neurology (2019), Vol. 92, No. 11, pp. 534	5.4.1 case b) Relevant but supplementary information: This article discusses the neurologic sequelae of glyphosate ingestion. Glyphosate cannot cross the blood brain barrier. It is not neurotoxic.
518	Plewis I.	CA 5.6.1	2019	Comment on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Archives of toxicology (2019), Vol. 93, No. 1, pp. 207	5.4.1 case b) Relevant but supplementary information: Glyphosate based herbicide (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.
519	Plewis I.	CA 5.6.1	2020	Comment on response from Milesi et al. to 'Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats'.	Archives of toxicology (2020), Vol. 94, pp. 351	5.4.1 case b) Relevant but supplementary information: Glyphosate based herbicide (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.
520	Pochron S. et al.	CA 8.4.1	2020	Glyphosate but not Roundup® harms earthworms (Eisenia fetida).	Chemosphere (2020), Vol. 241, pp. 125017	5.4.1 case b) Relevant but supplementary information: The study was not conducted to GLP. The test design does not correspond to a current test guideline for earthworms focusing on reproduction parameters and there is no endpoint for risk assessment. Only a single dose level was used in the test, which is equivalent to 19.7 kg/ha; substantially higher than the maximum proposed application rate of glyphosate for the renewal. There was no analytical confirmation of levels tested, so exposure cannot be confirmed.
521	Portier C. J. et al.	CA 5.5	2017	Re: Tarazona et al. (2017): Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC.	Archives of toxicology (2017), Vol. 91, No. 9, pp. 3195	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, ref to Tarazona et al. 2017, Archives of toxicology (2017), Vol. 91, No. 8, pp. 2723-2743.
522	Poulsen M. E. et al.	CA 6.9	2017	Results from the Danish monitoring programme for pesticide residues from the period 2004-2011	Food Control (2017), Vol. 74, pp. 25	5.4.1 case b) Relevant but supplementary information: Summary of EU monitoring data.
523	Prevot-D'Alvise N. et al.	CA 8.2.1	2013	Acute toxicity of a commercial glyphosate formulation on European sea bass juveniles (Dicentrarchus labrax L.): gene expressions of heme oxygenase-1 (ho-1), acetylcholinesterase (AChE) and aromatases (cyp19a and cyp19b).	Cellular and molecular biology (2013), Vol. 59 Suppl, pp. OL1906	5.4.1 case b) Relevant but supplementary information: Test item was appropriately identified as being linked to the representative formulation. Test design does not however follow a recognised approach, uneven sample sizes and large fish were exposed. The rationale behind test concentration selection was not clear and dose preparation was unclear as exposure rates could not be confirmed. Effects of acetone on fish were not discussed. Endpoints anyway demonstrate low toxicity compared to existing list of endpoints.
524	Puertolas L. et al.	CA 8.2	2010	Evaluation of side-effects of glyphosate mediated control of giant reed (Arundo donax) on the structure and function of a nearby Mediterranean river ecosystem.	Environmental research (2010), Vol. 110, No. 6, pp. 556	5.4.1 case b) Relevant but supplementary information: The effect of the herbicide Herbolex (mixture of glyphosate isopropyl amine salts and surfactant compounds) on the structure and function of a nearby river ecosystem after application of glyphosate in the riparian vegetation was evaluated. Therefore, in situ bioassays with

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						transplanted <i>Daphnia magna</i> , field collected caddis fly (<i>Hydropsyche</i> exocellata) and benthic macroinvertebrate structure and function were investigated. The structure of the benthic macroinvertebrate assemblages was assessed at the same time as well as two additional time-points before application (5 and two month before). Transplants with <i>Daphnia magna</i> were deployed at the day of application and 12 days afterwards, whereas <i>Hydropsyche</i> exocellata samples were collected at the day of application and 3 days afterwards. Concentration of glyphosate and the metabolite AMPA was analysed in the river water samples collected from the studied sites at the day of application and two, three and 12 days afterwards. But other chemicals were not analysed. The herbicide was applied at 2.1 kg glyphosate/ha in an area of 0.5 ha of riparian forest, but the exact place is not specified. Furthermore, no data on the weather conditions were collected which may have had an influence on the community structure. No exact biological data regarding the macroinvertebrate abundance is reported. However, as no results were reported in values reflecting agreed endpoints for the ecological risk assessment and the information is insufficient to transfer values in such endpoints, the study can be considered as supportive information only.
525	Puglis H. J. et al.	CA 8.1.4	2011	Effects of Technical-Grade Active Ingredient vs. Commercial Formulation of Seven Pesticides in the Presence or Absence of UV Radiation on Survival of Green Frog Tadpoles	Archives of Environmental Contamination and Toxicology (2011), Vol. 60, No. 1, pp. 145	5.4.1 case b) Relevant but supplementary information: Conducted in the US, compares glyphosate a.i. and glyphosate product (and others). Study looks at toxicity to green frog tadpoles (collected from local pond and kept in aged tap water) and impact of UV radiation to see if it enhances toxicity. Application up to 5 mg/L. Findings difficult to extrapolate to the regulatory risk assessment of glyphosate.
526	Qin J. et al.	CA 7.2.1.1	2017	Potential effects of rainwater-borne H2O2 on competitive degradation of herbicides and in the presence of humic acid.	Chemosphere (2017), Vol. 170, pp. 146	5.4.1 case b) Relevant but supplementary information: Provides information on degradation of glyphosate in the presence of hydrogen peroxide, Fe ²⁺ , and humic acid and the presence of another pesticide simulating conditions found in natural waters.
527	Quaglia G. et al.	CA 7.5	2019	A spatial approach to identify priority areas for pesticide pollution mitigation	JOURNAL OF ENVIRONMENTAL MANAGEMENT (2019), Vol. 246, pp. 5833	5.4.1 case b) Relevant but supplementary information: This paper describes a modeling approach to assess potential risk of glyphosate loads in waterbodies but does not utilize or report measured glyphosate concentrations. Provides supplemental information but not directly relevant for glyphosate EU risk assessment.
528	Rahman F. et al.	CA 8.9	2019	Evaluation of Glyphosate Levels in Sediments of Milky Stork Foraging Areas in Kuala Gula Bird Sanctuary, Perak, Malaysia.	Pertanika Journal of Tropical Agricultural Science (2019), Vol. 42, No. 3, pp. 995	5.4.1 case b) Relevant but supplementary information: Considered relevant but supplemental as this relates to biodiversity irrespective of not deriving from an EU country.

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529	Rahnama R. et al.	CA 8.2.1	2018	Acute toxicity of herbicides on the survival of adult shrimp, <i>Artemia Franciscana</i>	Iranian Journal of Toxicology (2018), Vol. 12, No. 6, pp. 45	5.4.1 case b) Relevant but supplementary information: Important information is missing in the material and methods section. The preparation and application of the test solutions was not reported. The test item is not adequately specified. The given purity of 41 % indicates that a product was tested. However, it is not clear whether the test concentrations refer to the product or to the active substance. In addition, the biological results of the test were not sufficiently stated. The endpoint data presented in the paper is difficult to understand. Table 3 in the article indicates a 48 hour LC50 of 17.483 mg/L, whilst in Figure 2, the 48 hour LC50 is 38.897 mg/L. Therefore, the reliability of the data presented in the article is questionable. In addition, it is unclear whether the animals were fed during the assay. Figure 3 appears to show artemia with egg bags and highlights the contents of the rudimentary artemia gut as being those exposed to herbicides. This observation is not supported by any information presented in the paper. No mortality data for the test concentrations nor for the controls is presented to evaluate the results. Assessment of the statistical power of the assay is not possible. Furthermore, there was no analytical verification of test concentrations reported, there is no guideline stated and it is non GLP. Multiple doses were tested, but a positive control group was not included, so the performance / robustness of the test system cannot be confirmed. The study is considered unreliable.
530	Raimets R. et al.	CA 6.10.1	2020	Pesticide residues in beehive matrices are dependent on collection time and matrix type but independent of proportion of foraged oilseed rape and agricultural land in foraging territory	Chemosphere (2020), Vol. 238, pp. 124555	5.4.1 case b) Relevant but supplementary information: The data are over-summarized. Only the percentage of samples with detectable / quantifiable residues, the median and the maximum residues are provided and it is not clear how many samples were analysed. Furthermore, it seems that the same data were already published (with more details) in a previous article (Karise R. et al., 2017). Therefore, the publication is considered to only provide supplementary information that is not directly relevant to MRL setting and risk assessment.
531	Rainio M. J. et al.	CA 8.3.2, CP 10.3.2	2019	Effects of a glyphosate-based herbicide on survival and oxidative status of a non-target herbivore, the Colorado potato beetle (<i>Leptinotarsa decemlineata</i>)	Comparative biochemistry and physiology. Toxicology & pharmacology (2019), Vol. 215, pp. 47	5.4.1 case b) Relevant but supplementary information: The material and methods section lacks some important information. Newly hatched larvae from field collected beetles were used, however information on previous exposure to other chemicals or field history was not documented. Information on replicates, loading per replicate and test conditions were not reported. The preparation of the test solution was not specified. The test approach used does not follow a recognised test guideline and the rationale for the route of exposure and the dosing volumes used, is not described. The author indicates that a 100% Roundup Bio exposure in nature is unlikely to occur and that the high concentration mainly tests the physiological limits of the system including the antioxidant enzyme capacity of the beetles

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						against the product. Exposure levels where significant effects were observed are unrealistic highlighting. There was no analytical verification, and the study was not performed according to GLP. Furthermore, endpoints based on biochemical analyses of larval homogenates cannot be applied in regulatory risk ecotoxicology assessment of non-target arthropods. Given the unrealistically high exposure levels used in the study, the non-guideline approach and the uncertainties as identified above, the study is considered as supplementary only.
532	Rampazzo N. et al.	CA 7.1.2.2.1	2013	Adsorption of glyphosate and aminomethylphosphonic acid in soils.	International Agrophysics (2013), Vol. 27, No. 2, pp. 203	5.4.1 case b) Relevant but supplementary information: The study investigates glyphosate and AMPA adsorption to 3 different soils. Iron-oxides appear to play an important role in adsorption of glyphosate and AMPA in these soils.
533	Ranganathaswamy M. et al.	CA 8.7	2012	Evaluation of toxicity of agrochemicals on Trichoderma isolates in vitro.	Journal of Biological Control (2012), Vol. 26, No. 4, pp. 391	5.4.1 case b) Relevant but supplementary information: The form of glyphosate used in the experiments cannot be confirmed. Fungal growth inhibition is not part of the specific ecotox risk assessment for the renewal.
534	Razi M. et al.	CA 5.8.2	2012	Histological and histochemical effects of Gly-phosate on testicular tissue and function.	Iranian Journal of Reproductive Medicine (2012), Vol. 10, No. 3, pp. 181	5.4.1 case b) Relevant but supplementary information: No internationally accepted methods were used, only one dose level was considered, there was no characterisation of the test compound and the results are not corroborated by regulatory reproductive toxicity studies using much higher dose levels and longer times of exposure. This publication is considered unreliable.
535	Rebai O. et al.	CA 5.3	2017	Morus alba leaf extract mediates neuroprotection against glyphosate-induced toxicity and biochemical alterations in the brain.	Environmental science and pollution research international (2017), Vol. 24, No. 10, pp. 9605	5.4.1 case b) Relevant but supplementary information: Formulation administered via i.p. injection (described as a commercial formulation registered in the Tunisian Ministry of Agriculture).
536	Reding M.-A.	CA 7.5	2012	Letter to the editor regarding "Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by on-line solid phase extraction followed by liquid chromatography coupled to tandem mass spectrometry".	Analytical and bioanalytical chemistry (2012), Vol. 404, No. 2, pp. 613	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, comments on Sanchis et al 2011, Analytical and bioanalytical chemistry (2012), Vol. 402, No. 7, pp. 2335-45.
537	Ren X. et al.	CA 5.8.2	2018	Effects of glyphosate on the ovarian function of pregnant mice, the secretion of hormones and the sex ratio of their fetuses.	Environmental pollution (2018), Vol. 243, No. Pt B, pp. 833	5.4.1 case b) Relevant but supplementary information: Glyphosate purity not reported. Only one dose level for glyphosate was tested (0.5% solution added to drinking water (it is unclear what actual dose was administered per day)). The number of animals used per dose level was too low. Insufficient information is given on the biochemical methods used. This publication is considered unreliable.

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538	Rendon-von Osten J. et al.	CA 5.9.2	2017	Glyphosate Residues in Groundwater, Drinking Water and Urine of Subsistence Farmers from Intensive Agriculture Localities: A Survey in Hopelchen, Campeche, Mexico.	International journal of environmental research and public health (2017), Vol. 14, No. 6, pp. E595	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment.
539	Reno U. et al.	CA 8.2.4	2016	EFFECTOS SUBLETALES DE CUATRO FORMULACIONES DE GLIFOSATO SOBRE Daphnia magna Y Ceriodaphnia dubia (CRUST ACEA, CLADOCERA)	Natura Neotropialis (2016), Vol. 47, No. 1, pp. 7	5.4.1 case b) Relevant but supplementary information: The aim of the study was to compare the chronic toxicity of four different commercially available glyphosate products to Daphnia magna and Ceriodaphnia dubia. The study was not conducted according to GLP and the study design lacks some details compared with relevant guidelines. The test concentrations are based on nominal and no analytical verification of test item concentrations were conducted (only analysis of stock solutions using an unspecific detector). Although the details of the statistical analyses are reported, the study report only describes where significant differences were found. No detailed results including standard deviations of the investigated parameters are provided. As the study is based on different glyphosate products, the toxicity of glyphosate active substance alone is unknown and therefore endpoints generated from this study are not quantifiable and deliver only supplementary information.
540	Resnik D. B.	CA 5.5	2015	Retracting Inconclusive Research: Lessons from the Seralini GM Maize Feeding Study	Journal of agricultural & environmental ethics (2015), Vol. 28, No. 4, pp. 621	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012_Food Chemical Toxicol (2012), retracted
541	Richards B. K. et al.	CA 7.1.4	2018	Antecedent and Post-Application Rain Events Trigger Glyphosate Transport from Runoff-Prone Soils	Environmental science & technology letters (2018), Vol. 5, No. 5, pp. 249	5.4.1 case b) Relevant but supplementary information: Run-off study in New York State, USA. The proposed soil hydrologic condition in 7 days pre-spraying is important in determining degree of runoff. Conclusion from study of interest even though data not appropriate for EU risk assessment.
542	Roberts D. M. et al.	CA 5.9	2010	A prospective observational study of the clinical toxicology of glyphosate-containing herbicides in adults with acute self- poisoning.	Clinical toxicology (2010), Vol. 48, No. 2, pp. 129	5.4.1 case b) Relevant but supplementary information: This paper is a prospective study of outcomes of suicidal ingestions of glyphosate based herbicides. It shows that the mortality rate from overdose is 3.2%. This paper supports the idea that low-toxicity pesticides have a lower mortality rate than higher toxicity products.
543	Rodrigues H. G. et al.	CA 5.4	2011	Effects of roundup pesticide on the stability of human erythrocyte membranes and micronuclei frequency in bone marrow cells of Swiss mice	Open Biology Journal (2011), Vol. 4, pp. 54	5.4.1 case b) Relevant but supplementary information: Substance identification is missing, the study is lacking statistically and moreover, a mixed study design has been presented where the micronuclei frequency had been investigated in mice after i.p. injection.
544	Rose M. T. et al.	CA 8.4.2	2018	Minor effects of herbicides on microbial activity in agricultural soils are detected by N-transformation but not enzyme activity assays	European journal of soil biology (2018), Vol. 87, pp. 72	5.4.1 case b) Relevant but supplementary information: Non-EU soil but relevant endpoints demonstrating a lack of effects on soil microbial populations (n-trans) at field application rates.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
545	Rother H.	CA 5.9.5	2012	Improving poisoning diagnosis and surveillance of street pesticides	SAMJ (2012), Vol. 102, No. 6, Special Iss., pp. 485	5.4.1 case b) Relevant but supplementary information: No new information included.
546	Ruamthum W. et al.	CA 8.1.4	2011	Effect of glyphosate-based herbicide on acetylcholinesterase activity in tadpoles, <i>Hoplobatrachus rugulosus</i> .	Communications in agricultural and applied biological sciences (2011), Vol. 76, No. 4, pp. 923	5.4.1 case b) Relevant but supplementary information: Conducted in Thailand. Study to look at effect of glyphosate on enzyme activity in tadpoles (east asian bullfrog). 96 hr exposure. LC50 values generated.
547	Ruiz-Gonzalez E. L. et al.	CA 8.2.4	2018	Assessment of median lethal concentration (CL50) of pollutants on <i>Macrobrachium tenellum</i> juveniles	Latin American Journal of Aquatic Research (2018), Vol. 46, No. 3, pp. 589	5.4.1 case b) Relevant but supplementary information: Considered supplementary as the test substance cannot be explicitly identified. Information presented suggests that this is not the representative formulation for the renewal as it is based on the potassium salt of glyphosate.
548	Rzymiski P. et al.	CA 8.2.7	2013	The effect of glyphosate-based herbicide on aquatic organisms - a case study.	Limnological Review (2013), Vol. 13, No. 4, pp. 215	5.4.1 case b) Relevant but supplementary information: Information may be relevant to the wider discussion on trophic interactions, but cannot be related to the EU level ecotox risk assessment for the renewal.
549	Sadeghi A. et al.	CA 8.2.1	2014	Investigation of LC50, NOEC and LOEC of glyphosate, deltamethrin and pretilachlor in guppies (<i>Poecilia reticulata</i>)	Iranian Journal of Toxicology (2014), Vol. 8, No. 26, pp. 1124	5.4.1 case b) Relevant but supplementary information: Study was considered to be conducted according to a recognised guideline via the cited reference in the paper, but the test system specifics cannot be confirmed. For example, there are validity criteria stated but water qualities / environmental conditions are not presented, so the suitability of the test system cannot be confirmed. Additionally, there was no analytical verification of the exposure concentrations, so exposure cannot be confirmed. The source and age / size of the fish are not presented in the paper, so the appropriateness of the test system cannot be confirmed. Additionally, the size of the aquariums used is stated (120 L) but the volume of test or control medium in these vessels is not stated, therefore fish loading rates cannot be determined. The test substance is identified as a 'commercial 41% glyphosate' - no other information are presented so effects cannot clearly be related to the active substance glyphosate, and the relevance of the test item used to the EU renewal of MON 5276 cannot be confirmed. The study is considered unreliable.
550	Saglikler H. A.	CA 7.1.2.1.1	2018	Carbon mineralisation in orange grove soils treated with different doses of glyphosate-amine salt	Journal of Environmental Protection and Ecology (2018), Vol. 19, No. 3, pp. 1102	5.4.1 case b) Relevant but supplementary information: Study demonstrates that glyphosate application at up to 4x recommended rates does not decrease carbon mineralisation in soil and in some cases increases carbon mineralisation. Data is supplementary of previously reported work.
551	Sakpa C. L. et al.	CA 5.6	2018	Effects of glyphosate on sperm parameters and pregnancy success rate in Wistar rats.	Annals of Biomedical Sciences (2018), Vol. 17, No. 2, pp. 156	5.4.1 case b) Relevant but supplementary information: The glyphosate used is not sufficiently characterized, only two dose levels were tested and the number of animals used per dose level was too low. This publication is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
552	Salgado T. P. et al.	CA 8.6.2	2011	Initial symptoms of Eucalyptus intoxication by glyphosate rates applied on the stem or leaves. Sintomas da intoxicaçao inicial de Eucalyptus proporcionados por subdoses de glyphosate aplicadas no caule ou nas folhas.	Planta Daninha (2011), Vol. 29, No. 4, pp. 913	5.4.1 case b) Relevant but supplementary information: Effects on eucalyptus seedlings after application of glyphosate (Roundup Original, 360 g a.e./L). Spraying the aerial part of the plants (trials 3 and 4). Plant BBCH stage unclear (height at start of application: 40/69 cm). No biological results for control or any test concentration reported in tables. Therefore the results cannot be reproduced. No results in values which can be used for the risk assessment.
553	Saltniras D. A. et al.	CA 5.8	2015	Glyphosate: The Fate and Toxicology of a Herbicidal Amino Acid Derivative.	Amino Acids in Higher Plants (2015), pp. 461	5.4.1 case b) Relevant but supplementary information: Overview of glyphosate toxicology and fate data.
554	Samal S. et al.	CA 8.5	2019	Evaluating the effect of monocrotophos and glyphosate on microbial population and certain important exoenzyme activities in soil.	Journal of Environmental Biology (2019), Vol. 40, No. 2, pp. 226	5.4.1 case b) Relevant but supplementary information: Dosing information / purity of both active substances cannot be confirmed. Study not conducted according to a recognised guideline. Presented endpoints not relateable to an EU level risk assessment based on lack of soil characterisation.
555	Santadino M. et al.	CA 8.4.1	2014	Glyphosate Sublethal Effects on the Population Dynamics of the Earthworm <i>Eisenia fetida</i> (Savigny, 1826)	Water, air, and soil pollution (2014), Vol. 225, No. 12, pp. 2207	5.4.1 case b) Relevant but supplementary information: The chronic laboratory study with <i>E. fetida</i> was not performed according to a recommended guideline and thus, no validity criteria were given. Insufficient information is provided on the experimental design, as no information on the soil characteristics and the application of the test item is given. Only two test item treatment rates, without giving any rationale for choosing the higher dose, and a negative control were tested, but no positive control. No information on underlying raw data is given, i.e. number of control mortality, number of juveniles and cocoons etc. Finally, there are no quantifiable endpoints presented in the paper, considered applicable to an EU level ecotoxicological risk assessment for renewal purposes.
556	Santos M. J. G. et al.	CA 8.4, CP 10.4.2.2	2012	Pesticide application to agricultural fields: effects on the reproduction and avoidance behaviour of <i>Folsomia candida</i> and <i>Eisenia andrei</i> .	Ecotoxicology (2012), Vol. 21, No. 8, pp. 2113	5.4.1 case b) Relevant but supplementary information: The study is well described and performed according to ISO guidelines. Validity criteria were met, where relevant. Glyphosate did not seem to affect either earthworms or collembolans at the recommended field dose; therefore there were no endpoints presented in the paper, thus the study is considered supplementary only.
557	Santos R. et al.	CA 5.9.4	2019	Thyroid and reproductive hormones in relation to pesticide use in an agricultural population in Southern Brazil	Environmental Research (2019), Vol. 173, pp. 221	5.4.1 case b) Relevant but supplementary information: Insufficient information is provided on the biochemical methods used. No detailed description of the analytical methods for the measurement of hormones in serum (using a kit from Roche). This publication is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
558	Saska P. et al.	CA 8.2.1	2017	Treating Prey With Glyphosate Does Not Alter the Demographic Parameters and Predation of the <i>Harmonia axyridis</i> (Coleoptera: Coccinellidae).	Journal of economic entomology (2017), Vol. 110, No. 2, pp. 392	5.4.1 case b) Relevant but supplementary information: Exposure was performed via treated prey, which does not correspond to an adequate route of exposure regarding current test guideline for non-target-arthropods. 2 mL test solution was applied to 50 aphids placed on a filter paper in a petri dish, (dimension unknown). There is no analytical verification, and the study does not conform to guidelines nor GLP. The study is well documented, but no endpoints could be derived which can be applied for the risk assessment. Therefore, the study is considered as supplementary only.
559	Saska P. et al.	CA 8.3	2016	Treatment by glyphosate-based herbicide alters life history parameters of the rose-grain aphid <i>Metopolophium dirhodum</i> .	Scientific reports (2016), Vol. 6, pp. 27801	5.4.1 case b) Relevant but supplementary information: The paper does not present endpoints that could be used in an EU level ecotox risk assessment.
560	Sato C. et al.	CA 5.9	2011	Aseptic meningitis in association with glyphosate-surfactant herbicide poisoning.	Clinical toxicology (2011), Vol. 49, No. 2, pp. 118	5.4.1 case b) Relevant but supplementary information: This article evaluates the case of a woman who presented in multi-organ failure 2 days after a formulated glyphosate overdose. Meningitis was suspected and the patient was found to have a high level of glyphosate in CSF. The claim is that glyphosate can cause aseptic meningitis and neurotoxicity. Glyphosate is hydrophilic and cannot cross cell membranes without active transport. It is well known that hypoxia and inflammatory changes can disrupt the tight junctions of the blood brain barrier which may allow passage of substances into the CSF. IL-6 is a known marker of inflammation. This is perhaps the mechanism through which they were able to measure glyphosate in the CSF. Since this paper is about a suicidal ingestion it should have no impact on re-registration.
561	Schimasi L. et al.	CA 5.5	2014	Non-Hodgkin lymphoma and occupational exposure to agricultural pesticide chemical groups and active ingredients: a systematic review and meta-analysis.	International journal of environmental research and public health (2014), Vol. 11, No. 4, pp. 4449	5.4.1 case b) Relevant but supplementary information: This paper concerns a meta-analysis where the results were taken from available studies at face value. The authors had no way to correct for recall bias, confounding, etc. As the meta-RRs of the studies included are in error the meta-analyses are also in error. The study is considered unreliable.
562	Schwan-Stoffel A. V. et al.	CA 8.6	2012	The effect of herbicides on the germination of urediniospores of <i>Phakopsora pachyrhizi</i> SYD. & P. SYD. Original Title: Germinacao de <i>Phakopsora pachyrhizi</i> SID. & P. SID. Sob diferentes herbicidas.	Arquivos do Instituto Biologico Sao Paulo (2012), Vol. 79, No. 3, pp. 381	5.4.1 case b) Relevant but supplementary information: Study describes the impacts of glyphosate on germination of plant pathogen spores.
563	Seok S-J. et al.	CA 5.9	2011	Surfactant volume is an essential element in human toxicity in acute glyphosate herbicide intoxication.	Clinical toxicology (2011), Vol. 49, No. 10, pp. 892	5.4.1 case b) Relevant but supplementary information: Results indicate that treatment of patients with acute glyphosate herbicide intoxication should take into account the volume and not the type of surfactants in herbicide formulations.
564	Seralini G-E. et al.	CA 5.5	2013	Answers to critics: Why there is a long term toxicity due to a Roundup-tolerant genetically modified maize and to a Roundup herbicide	Food and Chemical Toxicology (2013), Vol. 53, pp. 476	5.4.1 case b) Relevant but supplementary information: Author responding to multiple Letters to the Editor.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
565	Shaw G. M. et al.	CA 5.9	2014	Early pregnancy agricultural pesticide exposures and risk of gastroschisis among offspring in the San Joaquin Valley of California	Birth Defects Research, Part A: Clinical and Molecular Teratology (2014), Vol. 100, No. 9, pp. 686	5.4.1 case b) Relevant but supplementary information: No new information without clear relevance for the risk assessment.
566	Shaw W.	CA 5.9	2017	Elevated Urinary Glyphosate and Clostridia Metabolites With Altered Dopamine Metabolism in Triplets With Autistic Spectrum Disorder or Suspected Seizure Disorder: A Case Study.	Integrative medicine (2017), Vol. 16, No. 1, pp. 50	5.4.1 case b) Relevant but supplementary information: This is a limited case study of 3 individuals, with minimal data on glyphosate exposure.
567	Shiogiri N. S. et al.	CA 8.2	2010	Ecotoxicity of glyphosate and aterbane (R) br surfactant on guaru (Phalloceros caudimaculatus).	Acta Scientiarum Biological Sciences (2010), Vol. 32, No. 3, pp. 285	5.4.1 case b) Relevant but supplementary information: Conducted in Brazil, looking at comparison of toxicity of glyphosate products with different amounts of surfactant to different fish species and impact on electrical conductivity, dissolved oxygen and pH.
568	Shrestha S. et al.	CA 5.9.2	2018	Incident thyroid disease in female spouses of private pesticide applicators.	Environment International (2018), Vol. 118, pp. 282	5.4.1 case b) Relevant but supplementary information: Very superficial information about exposure to specific pesticides. Limitations in assessment of potential confounding factors. Limitations in exposure and outcome information. This publication is considered unreliable.
569	Shrestha S. et al.	CA 5.9.4	2018	Pesticide use and incident hypothyroidism in pesticide applicators in the agricultural health study	Environmental Health Perspectives (2018), Vol. 126, No. 9, pp. 11	5.4.1 case b) Relevant but supplementary information: Self-reported outcomes, lack of biological predicate for many pesticides (including glyphosate), and failure to control for confounding by other pesticides for glyphosate and for other pesticides. This publication is considered unreliable.
570	Siddhapara M. R. et al.	CP 10.3.2	2012	Toxicity of some commonly used insecticides/herbicides on Zygozogramma bicolorata Pallister (Coleoptera: Chrysomelidae).	Journal of Biological Control (2012), Vol. 26, No. 3, pp. 251	5.4.1 case b) Relevant but supplementary information: The source of the beetles used was not adequately described. The source and purity of the glyphosate test substance was not described, preventing confirmation of the exposure concentrations used in the test. There was insufficient description of the test system to enable comparison with existing test guidelines to establish acceptability of the approach used. Analytical verification of the exposure concentrations was not performed. No endpoint can be derived from the study. The study is considered as supplementary only.
571	Sihthmae M. et al.	CA 8.2.4.1, CA 8.6, CA 8.7	2013	Ecotoxicological effects of different glyphosate formulations	Applied soil ecology (2013), Vol. 72, pp. 215	5.4.1 case b) Relevant but supplementary information: The study design and overall conduct were well described. The D. magna toxicity test was performed according to OECD guideline 202 but validity criteria were not mentioned. Analytical verification of the test materials and exposure concentrations within the study was also lacking. Overall, the study is considered to be of limited relevance to the EU annex renewal of glyphosate as the D. magna toxicity test was only a small part of the study, and the soil portion of the study was conducted using exaggerated soil concentrations (up to 1000 times relevant levels). For these reasons, the study is considered supplemental only.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
572	Silva V. et al.	CA 7.5	2019	Pesticide residues in European agricultural soils - A hidden reality unfolded	Science of the total environment (2019), Vol. 653, pp. 1532	5.4.1 case b) Relevant but supplementary information: Analysis for glyphosate & AMPA and other pesticides in 317 soil samples from 11 EU countries. Provides indication of residues but no use history.
573	Singh B. et al.	CA 7.1.3.1.1	2014	Soil characteristics and herbicide sorption coefficients in 140 soil profiles of two irregular undulating to hummocky terrains of western Canada	Geoderma (2014), Vol. 232-234, pp. 107	5.4.1 case b) Relevant but supplementary information: Soil adsorption data for glyphosate are reported but they are well within the numbers reported in the dossier.
574	Skeff W. et al.	CA 7.5	2015	Glyphosate and AMPA in the estuaries of the Baltic Sea method optimization and field study.	Marine pollution bulletin (2015), Vol. 100, No. 1, pp. 577	5.4.1 case b) Relevant but supplementary information: Provides optimized analytical method and surface water monitoring results for 10 estuaries along the Baltic Sea in Germany.
575	Skretteberg L. G. et al.	CA 6.9	2015	Pesticide residues in food of plant origin from Southeast Asia - A Nordic project	Food Control (2015), Vol. 51, pp. 225	5.4.1 case b) Relevant but supplementary information: Monitoring data that may be relevant to the actual exposure of EU consumers to glyphosate residues. But non EU data, therefore, not directly linked to the representative uses.
576	Slager R. E. et al.	CA 5.9.4	2010	Rhinitis associated with pesticide use among private pesticide applicators in the agricultural health study	Journal of Toxicology and Environmental Health - Part A: Current Issues (2010), Vol. 73, No. 20, pp. 1382	5.4.1 case b) Relevant but supplementary information: No information on the formulations, farming practice in the given time period has been provided.
577	Slomberg D. L. et al.	CA 7.5	2017	Insights into natural organic matter and pesticide characterisation and distribution in the Rhone River.	Environmental Chemistry (2017), Vol. 14, No. 1, pp. 64	5.4.1 case b) Relevant but supplementary information: Supplementary information on glyphosate detection in surface water.
578	Smpokou E. et al.	CA 5.9.4	2019	Environmental exposures in young adults with declining kidney function in a population at risk of Mesoamerican nephropathy.	Occupational and environmental medicine (2019), Vol. 76, No. 12, pp. 920	5.4.1 case b) Relevant but supplementary information: Too little glyphosate exposure for an informative study. Many confounding exposures. Although this was described as a case control study, the authors did not calculate odds ratios. Evaluation of mean values is not a causal parameter in a case control study. This publication is considered unreliable.
579	Solomon K. R.	CA 5.5	2017	What is the problem with glyphosate?	Outlooks on Pest Management (2017), Vol. 28, No. 4, pp. 173	5.4.1 case b) Relevant but supplementary information: Review of IARC deficiencies.
580	Solomon K. R.	CA 5.9.2	2016	Glyphosate in the general population and in applicators: a critical review of studies on exposures.	Critical reviews in toxicology (2016), Vol. 46, No. suppl, pp. 21	5.4.1 case b) Relevant but supplementary information: review, secondary source.
581	Solomon K.R.	CA 5.5	2018	Corrigendum to: Glyphosate in the general population and in applicators: a critical review of studies on exposures.	Critical Reviews in Toxicology (2018), Vol 48, No 10, pp. 896	5.4.1 case b) Relevant but supplementary information: Corrigendum to Solomon et al. 2016, Critical Reviews in Toxicology (2016), 46, suppl, pp. 21-27.
582	Song H.	CA 8.2	2010	Toxic action of acetamiprid, glyphosate and their combined pollution on Hydra magnipapillata	Anhui Nongye Kexue (2010), Vol. 38, No. 20, pp. 10811	5.4.1 case b) Relevant but supplementary information: Test species (freshwater polyp) collected from a rural pond in China. It is not clear what previous exposure the test species may have had to pesticides. It is not clear if the glyphosate is technical grade or product; the concentrations are from 0.14 to 36 mg/L.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
583	Song H. et al.	CA 8.2	2010	The Single and Binary-Combined Acute Toxicities of Five Common Pesticides on Hydra Magnipapillata	Journal of Anhui Normal University (Natural Science) (2010), Vol. 33, no. 2, pp. 159	5.4.1 case b) Relevant but supplementary information: Test species (freshwater polyp) collected from rural pond in China, it is not clear what exposure the test species may have had to pesticides or other chemicals previously. It is not clear if the glyphosate is technical material or product; the concentrations are from 40 to 227 mg/L.
584	Song H-Y. et al.	CA 5.8	2012	In vitro cytotoxic effect of glyphosate mixture containing surfactants.	Journal of Korean medical science (2012), Vol. 27, No. 7, pp. 711	5.4.1 case b) Relevant but supplementary information: In vitro mixture effects only, not glyphosate alone.
585	Sorahan T.	CA 5.5	2016	Visualising and thinking and interpreting. Response to the Burstyn and de Ros comments on Sorahan "Multiple myeloma and glyphosate use: A re-analysis of us agricultural health study (AHS) data".	International Journal of Environmental Research and Public Health (2016), Vol. 14, No. 1, pp. E6	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Response to Burstyn et al. on Sorahan et al. 2015. Int. J. Environ. Res. Public Health (2015), Vol. 12, pp. 1548-1559.
586	Sribandimongkol P. et al.	CA 5.9.5	2012	Pathological and toxicological findings in glyphosate-surfactant herbicide fatality: a case report.	The American journal of forensic medicine and pathology (2012), Vol. 33, No. 3, pp. 234	5.4.1 case b) Relevant but supplementary information: Description of a case of poisoning / suicidal ingestions of formulated glyphosate cause caustic injury, it is not unusual to find ulceration and haemorrhage of the GI tract in lethal ingestions.
587	Sritana N. et al.	CA 5.8.3	2018	Glyphosate induces growth of estrogen receptor alpha positive cholangiocarcinoma cells via non-genomic estrogen receptor/ERK1/2 signaling pathway.	Food and chemical toxicology (2018), Vol. 118, pp. 595	5.4.1 case b) Relevant but supplementary information: The results showed that glyphosate has the same potency as Estradiol (E2) when tested at extremely low concentrations. This has not been corroborated by other ED studies. This publication is considered unreliable.
588	Staufner P. et al.	CA 7.5	2012	Diffuse inflow from settlements	Aqua & Gas (2012), Vol. 92, No. 11, pp. 42	5.4.1 case b) Relevant but supplementary information: Describes modeling to predict contamination of 4 chemicals (one of which is glyphosate) in rainfall runoff and stormwater overflow discharge from WWTP outflow. Evaluates results at both the local and the Rhein River scale.
589	Stecca C. S. et al.	CA 8.3	2016	Side-Effects of Glyphosate to the Parasitoid Telenomus remus Nixon (Hymenoptera: Platygasteridae).	Neotropical entomology (2016), Vol. 45, No. 2, pp. 192	5.4.1 case b) Relevant but supplementary information: The study was conducted in accordance with the protocols proposed by IOBC. Exposure via overspray on egg-cards and parasitoid pupae does not correspond to an adequate route of exposure according to current guidelines for testing non-target arthropods. The test design for the bioassay where adults are exposed to dry residues moderately described. The mortality of parasitoids during exposure is unclear, however, the spray deposit is given. The assessment of the biological endpoints in not precisely reported; day of emergence of parasitoids is not given. As the biological data do not report results in values useful for the risk assessment, there is no analytical verification, and the study is non GLP, the study can be considered as supplementary only.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
590	Stellin F. et al.	CA 8.4.1	2017	Effects of different concentrations of glyphosate (Roundup 360A®) on earthworms (<i>Octodrilus complanatus</i> , <i>Lumbricus terrestris</i> and <i>Aporrectodea caliginosa</i>) in vineyards in the North-East of Italy	Applied soil ecology (2018), Vol. 123, pp 802	5.4.1 case b) Relevant but supplementary information: The study has not been conducted according to a recognized test guideline and there are no validity criteria presented. There is no information on the choice of test duration and the experimental design is not sufficiently described. A formulation was tested, but no information is given on the set-up of the spray solution, how application was carried out and at which volume. For the soil sampling, the time point of sampling is not stated and no information on storage conditions of the soil prior to use in the study is given. Additionally, information on the soil depth in the experimental test containers is not mentioned. Similarly no information on food and environmental conditions during the exposure period (e.g. temperature, soil moisture, light conditions) are available. Finally, there are no quantifiable endpoints presented in the paper.
591	Stephenson C. L. et al.	CA 6.9	2016	An assessment of dietary exposure to glyphosate using refined deterministic and probabilistic methods.	Food and chemical toxicology (2016), Vol. 95, pp. 28	5.4.1 case b) Relevant but supplementary information: Refined dietary risk assessment.
592	Stipicevic S.	CA 5.5	2017	Some organophosphate insecticides and herbicides	Arhiv Za Higijenu Rada i Toksikologiju (2017), Vol. 68, No. 2, pp. A10	5.4.1 case b) Relevant but supplementary information: Commentary on IARC evaluation.
593	Suleman M. et al.	CA 7.1.4.1	2019	Laboratory simulation studies of leaching of the priority pesticides and their transformation products in soils	Journal of Animal and Plant Sciences (2019), Vol. 29, No. 4, pp. 1112	5.4.1 case b) Relevant but supplementary information: It does not follow the OECD Column Leaching Guideline (OECD 312). Rather than applying artificial rain continuously for 48 hrs as per guideline, an unspecified amount of artificial rain is applied at the end of the day to achieve 35-40 mL of leachate the following morning.
594	Sun Q. et al.	CA 8.5	2012	Effects of typical herbicides on soil respiration and N2O emissions from soil added with different nitrogen fertilizers.	Huan jing ke xue= Huanjing kexue (2012), Vol. 33, No. 6, pp. 1994	5.4.1 case b) Relevant but supplementary information: The study uses soil from fields in China, without describing the history of the fields (e.g. prior pesticide and fertilizer use), soil sampling, and soil storage conditions prior to the start of the experiment. Soil characteristics are unclear as no information on e.g. CEC and water holding capacity is available. The study was not conducted to a relevant guideline and thus no validity criteria are available. A negative control was included, but no information on replicates is available and only one test item concentration was tested. No positive control was tested. Application of the test item is not described well, the active substance content of the test item is not given and no verification of applied test amount was performed. Finally, there is no quantifiable endpoint presented.
595	Swartjes F. A. et al.	CA 7.5	2020	Measures to reduce pesticides leaching into groundwater-based drinking water resources: An appeal to national and local governments, water boards and farmers	The Science of the total environment (2020), Vol. 699, pp. 134186	5.4.1 case b) Relevant but supplementary information: Does not provide new data but summarizes exceedances of >75% of 0.1 ug/L for GW abstractions used for Drinking Water. Also proposes measures to reduce pesticide concentrations in GW.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
596	Tahir H. M. et al.	CA 8.3	2019	Effect of Pesticides on Biological Control Potential of <i>Neoscona theisi</i> (Araneae: Araneidae)	JOURNAL OF INSECT SCIENCE (2019), Vol. 19, No. 2, pp. 1	5.4.1 case b) Relevant but supplementary information: Considered supplemental as the approach used does not follow an approach recognised at EU level for use in risk assessment.
597	Takeuchi I. et al.	CA 5.9.5	2019	Decrease in Butyrylcholinesterase Accompanied by Intermediate-like Syndrome after Massive Ingestion of a Glyphosate-surfactant.	Internal medicine (2019), Vol. 15; No. 58, pp. 3057	5.4.1 case b) Relevant but supplementary information: Description of a poisoning case related to a surfactant, symptoms are not unusual.
598	Tang T. et al.	CA 7.5	2017	Hysteresis and parent-metabolite analyses unravel characteristic pesticide transport mechanisms in a mixed land use catchment.	Water Research (2017), Vol. 124, pp. 663	5.4.1 case b) Relevant but supplementary information: Use of adapted hysteresis modeling to improve understanding on pesticide metabolite transport behaviours in catchments with diverse pesticide sources and complex transport mechanisms and provide a basis for effective management strategies. Provides information on other sources of AMPA (besides glyphosate degradation).
599	Tongo I. et al.	CA 6.4.2	2015	Human health risks associated with residual pesticide levels in edible tissues of slaughtered cattle in Benin City, Southern Nigeria.	Toxicology Reports (2015), Vol. 2, pp. 1117	5.4.1 case b) Relevant but supplementary information: Provides information on the relative residue levels in various edible cattle tissues but since the exposure of the cattle is not known no transfer factors can be derived.
600	Tarazona J. V. et al.	CA 5.5	2017	Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC.	Archives of toxicology (2017), Vol. 91, No. 8, pp. 2723	5.4.1 case b) Relevant but supplementary information: Comparison of EU regulatory review with IARC evaluation.
601	Tarazona J. V. et al.	CA 5.5	2017	Response to the reply by C. J. Portier and P. Clausen, concerning our review "Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC".	Archives of toxicology (2017), Vol. 91, No. 9, pp. 3199	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, ref to Portier et al_2017_Arch Toxicol (2017), Vol. 91, No. 9, pp. 3195-3197.
602	Tarone R. E.	CA 5.5	2018	On the International Agency for Research on Cancer classification of glyphosate as a probable human carcinogen	European journal of cancer prevention (2018), Vol. 27, No. 1, pp. 82	5.4.1 case b) Relevant but supplementary information: review, secondary source.
603	Tauchnitz N. et al.	CA 7.5	2017	Quantification of pesticide input into surface waters in a small catchment area (Querne/Weida). Quantifizierung von Pflanzenschutzmittel(PSM)-Eintraegen in Oberflaechengewaeser in einem Kleinzugsgebiet (Querne/Weida).	Lysimeter Forschung-Moeglichkeiten und Grenzen Lysimeter research - options and limits, 9-10 May 2017, Raumberg-Gumpenstein, Austria (2017), pp. 11	5.4.1 case b) Relevant but supplementary information: Provides information on surface water sampling in Germany, but no concentrations of glyphosate reported.
604	Thakur D. S. et al.	CA 5.9.5	2014	Glyphosate poisoning with acute pulmonary edema.	Toxicology international (2014), Vol. 21, No. 3, pp. 328	5.4.1 case b) Relevant but supplementary information: This is a case report of the clinical manifestations of glyphosate-based herbicide ingestions and discusses predictors of mortality in suicidal ingestions and therefore should not impact registration decisions.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
605	Thompson H. M. et al.	CA 6.10.1	2014	Evaluating exposure and potential effects on honeybee brood (<i>Apis mellifera</i>) development using glyphosate as an example.	Integrated environmental assessment and management (2014), Vol. 10, No. 3, pp. 463	5.4.1 case b) Relevant but supplementary information: No MRLs are currently set for presented commodities and these commodities are not considered for dietary risk assessment either. Therefore, the findings do not directly impact the consumer risk assessment.
606	Tizhe E. V. et al.	CA 5.3	2014	Influence of zinc supplementation on histopathological changes in the stomach, liver, kidney, brain, pancreas and spleen during subchronic exposure of Wistar rats to glyphosate.	Comparative clinical pathology (2014), Vol. 23, No. 5, pp. 1535	5.4.1 case b) Relevant but supplementary information: Formulation tested (Bushfire, Monsanto Europe, 360 g/L glyphosate; 441 g/L potassium salt). Non-representative formulation for EU.
607	Tizhe E. V. et al.	CA 5.3	2013	Haematological changes induced by subchronic glyphosate exposure: ameliorative effect of zinc in Wistar rats.	Sokoto Journal of Veterinary Sciences (2013), Vol. 11, No. 2, pp. 28	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo (Bushfire, 441 g/L potassium salt, 360 g/L a.e.). Non-representative formulation for EU.
608	Todorovic G. R. et al.	CA 7.5	2010	Dispersion of glyphosate in soils through erosion. Environmental Quality 4	Air, water, and soil pollution (2010), Vol. 4, pp. 15	5.4.1 case b) Relevant but supplementary information: Analysis of runoff samples from small vegetative field plots following glyphosate application and subsequent artificial rain is not expected to provide additional relevant data. Furthermore, no details of analytical methods is reported.
609	Tome H. V. V. et al.	CA 8.3.1	2020	Frequently encountered pesticides can cause multiple disorders in developing worker honey bees.	Environmental pollution (2020), Vol. 256, pp. 113420	5.4.1 case b) Relevant but supplementary information: The data presented are relevant to the wider discussion of the effects of glyphosate on pollinators, but as the rates established for glyphosate used in the study were based on reported levels found in pollen and wax from another active substance, from an exposure perspective, they cannot be related to glyphosate.
610	Tong M. et al.	CA 6.2.1	2017	Uptake, Translocation, Metabolism, and Distribution of Glyphosate in Nontarget Tea Plant (<i>Camellia sinensis</i> L.).	Journal of agricultural and food chemistry (2017), Vol. 65, No. 35, pp. 7638	5.4.1 case b) Relevant but supplementary information: Supplementary information on the uptake and metabolism of glyphosatephoste applied in nutrient solution to tea plants.
611	Tribe D.	CA 5.5	2013	Serious inadequacies regarding the pathology data presented in the paper by Seralini et al. (2012).	Food and Chemical Toxicology (2013), Vol. 53, pp. 452	5.4.1 case b) Relevant but supplementary information: Letter to the Editor, Comment on Seralini et al. 2012, Food Chemical Toxicol (2012), retracted.
612	Truta E. et al.	CA 8.6.2	2011	Evaluation of Roundup-induced toxicity on genetic material and on length growth of barley seedlings.	Acta biologica Hungarica (2011), Vol. 62, No. 3, pp. 290	5.4.1 case b) Relevant but supplementary information: Impact of glyphosate product on barley seedling development. Unclear how endpoint could be used in risk assessment.
613	Tush D. et al.	CA 7.1.2.1.1	2018	Dissipation of polyoxyethylene tallow amine (POEA) and glyphosate in an agricultural field and their co-occurrence on streambed sediments.	The Science of the total environment (2018), Vol. 636, pp. 212	5.4.1 case b) Relevant but supplementary information: Study was conducted in the US but provides data on POEA, glyphosate, and AMPA adsorption and dissipation in top 45 cm of soil and in stream bed sediments. Conclusions useful in qualitative rather than quantitative way.
614	Uchida M. et al.	CA 8.2.1	2012	Toxicity evaluation of glyphosate agrochemical components using Japanese medaka (<i>Oryzias latipes</i>) and DNA microarray gene expression analysis	The Journal of toxicological sciences (2012), Vol. 37, No. 2, pp. 245	5.4.1 case b) Relevant but supplementary information: The material and methods part lack some important information. Only glyphosate was sufficiently documented, but the formulation Roundup is not specified. In addition, it is unclear whether the test concentrations for the formulation refer to the active ingredient or to the product. The test design is not adequately described. Only a concentration range

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						was given and tested dose rates remain unclear. The performance of a control group as well as the description of observations is not reported. No mortality data neither for the test concentrations nor for the controls was given to evaluate the results. Furthermore, there was no analytical verification of test concentrations reported. No suitable exposure throughout the test was demonstrated and thus the reliability of the study is questionable. The test guideline followed was not stated nor was the study conducted to GLP.
615	Ulu T. C. et al.	CA 8.4.2	2016	Effects of different pesticides on virulence and mortality of some entomopathogenic nematodes.	ISI-Invertebrate Survival Journal (2016), Vol. 13, pp. 111	5.4.1 case b) Relevant but supplementary information: Nematode mortality and effects on virulence are not endpoints used in EU level ecotox risk assessment for the renewal.
616	Umsza-Guez M. A. et al.	CA 6.10.1	2019	Herbicide determination in Brazilian propolis using high pressure liquid chromatography.	International journal of environmental health research (2019) pp. 1 (Ahead of print)	5.4.1 case b) Relevant but supplementary information: Currently no EU MRL is set for propolis and since propolis is not taken into account for dietary risk assessment in the EU. Because of that and due to the reliability of the analytical method is not clearly established the publication is considered supplementary.
617	Uren Webster T. M. et al.	CA 8.2.2, CA 8.2.3, CP 10.2.2, CP 10.2.3	2014	Effects of glyphosate and its formulation, roundup, on reproduction in zebrafish (Danio rerio).	Environmental science & technology (2014), Vol. 48, No. 2, pp. 1271	5.4.1 case b) Relevant but supplementary information: The test substance Roundup GC is not the representative formulation for the Annex I renewal. There was only a single glyphosate exposure group at 10 mg/L prepared from analytical grade. The purity of the material was not confirmed, but it was stated to be analytical grade. The study provides no endpoints for glyphosate, that could be used in the ecotoxicology risk assessment for Annex I renewal. Thus the study is considered supplementary only.
618	Usenko O. M. et al.	CA 8.2, CP 10.2	2010	Effect of fluorine containing herbicides on functional activity of algae	Gidrobiologicheskii Zhurnal (2010), Vol. 46, No. 1, pp. 75	5.4.1 case b) Relevant but supplementary information: Phytoplankton collected in a field in Ukraine. Unclear what exposure the test species may have had to pesticides or other chemicals previously. Test design is not specified at all. Unclear main points: acclimatisation period, application of test substance, number of replicates or cells per replicates. Unclear if result values refer to product or active ingredient. No results in values which can be used for the risk assessment.
619	Varnai V. M. et al.	CA 5.9.5	2013	Report of the poison control centre for the period 1 January - 31 December 2012. Original title: Izvjesce centra za kontrolu otrovanja za razdoblje od 1. Siječnja do 31. Prosinca 2012.	Arhiv za Higijenu Rada i Toksikologiju (2013), Vol. 64, No. 1, pp. 183	5.4.1 case b) Relevant but supplementary information: This is a report from the Croatian Poison Center documenting types of exposure reported in 2012. Of the 134 calls regarding pesticide exposure, 84 demonstrated "effects" with 9 described as "serious". Glyphosate was listed as one of the pesticides demonstrating a serious effect. There were no other details provided and there were no fatalities as a result of pesticide exposure.
620	Vazquez D. E. et al.	CA 8.3.1	2018	Glyphosate affects the larval development of honey bees depending on the susceptibility of colonies	PLoS One (2018), Vol. 13, No. 10, pp. E0205074	5.4.1 case b) Relevant but supplementary information: Endpoints presented are considered supplemental as the method of exposure used for the bees were not described.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
621	Veale D. J. H. et al.	CA 5.9.5	2013	Toxicovigilance I: a survey of acute poisonings in South Africa based on tygerberg poison information centre data	SAMJ (2013), Vol. 103, No. 5, pp. 293	5.4.1 case b) Relevant but supplementary information: This article summarises the chemicals used in South Africa for suicide. Glyphosate is only mentioned in a table in the article as being involved in 23 cases over a 1 year period accounting for 0.9% of the overall cases reported.
622	Velasques R. R. et al.	CA 8.2.1	2016	Roundup® in Zebrafish: Effects on Oxidative Status and Gene Expression.	Zebrafish (2016), Vol. 13, No. 5, pp. 432	5.4.1 case b) Relevant but supplementary information: The data presented demonstrates that in the presence of a toxicant, there are changes in the oxidative status of zebrafish gills and liver tissue. However, these data cannot be related to an Annex I risk assessment for renewal.
623	Velastegui-Espin G. P. et al.	CA 5.6.1	2018	Glyphosate: its use and implications for human health. El glifosato: su uso e implicaciones en la salud humana.	Journal of the Selva Andina Biosphere (2018), Vol. 6, No. 2, pp. 86	5.4.1 case b) Relevant but supplementary information: review, secondary source of information.
624	Vera-Candiotti J. et al.	CA 5.4	2013	Single-cell gel electrophoresis assay in the ten spotted live-bearer fish, <i>Cnesterodon decemmaculatus</i> (Jenyns, 1842), as bioassay for agrochemical-induced genotoxicity.	Ecotoxicology and environmental safety (2013), Vol. 98, pp. 368	5.4.1 case b) Relevant but supplementary information: GBHs tested on fish
625	Vidyadhara et al.	CA 5.9.5	2014	Atypical presentation of glyphosate poisoning.	Indian Journal of Critical Care Medicine (2014), Vol. 18, Suppl. 1, pp. S36.	5.4.1 case b) Relevant but supplementary information: This is a report about multiorgan failure after suicidal ingestion of formulated glyphosate and should not impact re-registration.
626	Vincent K. et al.	CA 8.1.4	2015	The toxicity of glyphosate alone and glyphosate-surfactant mixtures to western toad (<i>Anaxyrus boreas</i>) tadpoles.	Environmental toxicology and chemistry (2015), Vol. 34, No. 12, pp. 2791	5.4.1 case b) Relevant but supplementary information: Approaches used are not recognised approaches, but do inform on the toxicity of glyphosate IPA salt to amphibians in the glyphosate only investigations.
627	Waiman C. V. et al.	CA 7.1.3.1.1	2016	The simultaneous presence of glyphosate and phosphate at the goethite surface as seen by XPS, ATR-FTIR and competitive adsorption isotherms	Colloids and Surfaces A: Physicochemical and Engineering Aspects (2016), Vol. 498, pp. 121	5.4.1 case b) Relevant but supplementary information: The study does not investigate soil adsorption but mineral. The study does not include an endpoint relevant for the risk assessment.
628	Wang D. et al.	CA 5.9.5	2019	Successful extracorporeal membrane oxygenation support for severe acute diquat and glyphosate poisoning: A case report.	Medicine (2019), Vol. 98, No. 6, pp. e14414	5.4.1 case b) Relevant but supplementary information: This article describes using ECMO to manage a patient with multiorgan failure after formulated glyphosate and diquat ingestion. Since this is describing medical management of suicidal overdoses, it should not impact reregistration
629	Wang G. et al.	CA 5.9.4	2011	Parkinsonism after chronic occupational exposure to glyphosate.	Parkinsonism & related disorders (2011), Vol. 17, No. 6, pp. 486	5.4.1 case b) Relevant but supplementary information: Reversible Parkinsonism in case of acute intoxication is a well-known effect and not specific for glyphosate. No clear causal connection of chronic Parkinsonism to glyphosate from the presented results.
630	Wang M. et al.	CA 7.1.3.1.1	2019	Montmorillonites Can Tightly Bind Glyphosate and Paraquat Reducing Toxin Exposures and Toxicity	ACS omega (2019), Vol. 4, No. 18, pp. 17702	5.4.1 case b) Relevant but supplementary information: Article provides binding properties of glyphosate to calcium and sodium montmorillonite clay. Supplementary information as clay is a soil component, not a soil.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
631	Weir S. M. et al.	CA 8.1.4	2016	Acute toxicity and risk to lizards of rodenticides and herbicides commonly used in New Zealand.	New Zealand Journal of Ecology (2016), Vol. 40, No. 3, pp. 342	5.4.1 case b) Relevant but supplementary information: Species relevance is difficult to relate to an EU level ecotox risk assessment for Annex I.
632	Williams A. L. et al.	CA 5.6	2012	Developmental and reproductive outcomes in humans and animals after glyphosate exposure: a critical analysis.	Journal of toxicology and environmental health. Part B, Critical reviews (2012), Vol. 15, No. 1, pp. 39	5.4.1 case b) Relevant but supplementary information: review, secondary source.
633	Williams B. K. et al.	CA 8.1.4	2010	Larval responses of three midwestern anurans to chronic, low-dose exposures of four herbicides.	Archives of environmental contamination and toxicology (2010), Vol. 58, No. 3, pp. 819	5.4.1 case b) Relevant but supplementary information: Eggs collected from wetlands.
634	Williams G. M.	CA 5.5	2018	Corrigendum to: Glyphosate rodent carcinogenicity bioassay expert panel review (Critical Reviews in Toxicology, (2016), 46, suppl. (44-55), 10.1080/10408444.2016.1214679)	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp. 914	5.4.1 case b) Relevant but supplementary information: Corrigendum to article Williams_2016, Critical reviews in toxicology (2016), Vol. 46, No. suppl. 4
635	Williams G. M. et al.	CA 5.5	2016	Glyphosate rodent carcinogenicity bioassay expert panel review.	Critical reviews in toxicology (2016), Vol. 46, No. suppl. 1, pp. 44	5.4.1 case b) Relevant but supplementary information: review, secondary source.
636	Williams G. M. et al.	CA 5.5	2018	Corrigendum: A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment.	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp. 907	5.4.1 case b) Relevant but supplementary information: Corrigendum to: A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment (Critical Reviews in Toxicology, (2016), 46, suppl. 1, pp. 3-20.)
637	Williams G. M. et al.	CA 5.9.4	2016	A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment.	Critical reviews in toxicology (2016), Vol. 46, No. suppl. 1, pp. 3	5.4.1 case b) Relevant but supplementary information: review, secondary source.
638	Wood L. J.	CA 6.2.1	2019	The presence of glyphosate in forest plants with different life strategies one year after application.	Canadian Journal of Forest Research (2019), Vol. 49, No. 6, pp. 586	5.4.1 case b) Relevant but supplementary information: In order to properly interpret the findings of the publication, it would be important to determine the residues in the non-target crops shortly after application. However, this information is only available indirectly from other studies. According to the publication : “Compared with levels detected in forest plants immediately after application by Feng and Thompson (1990), levels detected in this study are very low.” This means that the residues shortly after application were extremely high, far above the levels that may occur in non-target plants in Europe due to contamination by spray-drift. For this reason and after full text review, the publication is considered to be of limited relevance to the EU renewal dossier. It only provides supplementary information.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
639	Wrobel M. H.	CA 5.8.2	2018	Glyphosate affects the secretion of regulators of uterine contractions in cows while it does not directly impair the motoric function of myometrium in vitro.	Toxicology and applied pharmacology (2018), Vol. 349, pp. 55	5.4.1 case b) Relevant but supplementary information: Glyphosate used is not sufficiently characterized and the analysis of glyphosate, hormones and prostaglandins is not sufficiently documented. This publication is considered unreliable.
640	Wu C. J. et al.	CA 5.9.5	2015	PiCCO interpretation for acute glyphosate intoxication with shock: Favors cardiogenic origin.	Clinical Toxicology (2015), Vol. 53, No. 4, pp. 329	5.4.1 case b) Relevant but supplementary information: This is a report regarding multiorgan failure following suicidal ingestion of formulated glyphosate and should not impact re-registration.
641	Wu I-L. et al.	CA 5.9.5	2015	Glyphosate intoxication resulting in ventricular dysrhythmias and cardiogenic shock.	Clinical Toxicology (2015), Vol. 53, No. 4, pp. 329	5.4.1 case b) Relevant but supplementary information: This is a report regarding multiorgan failure and use of ECMO following suicidal ingestion of formulated glyphosate and should not impact re-registration.
642	Wu M-H. et al.	CA 5.9.5	2015	Successful treatment with hemodialysis for acute renal failure after glyphosate poisoning: A case report.	Clinical Toxicology (2015), Vol. 53, No. 4, pp. 330	5.4.1 case b) Relevant but supplementary information: This is a report about renal failure and haemodialysis after suicidal ingestion of formulated glyphosate and should not impact re-registration.
643	Wunnapuk K. et al.	CA 5.9.5	2014	Use of a glyphosate-based herbicide-induced nephrotoxicity model to investigate a panel of kidney injury biomarkers.	Toxicology letters (2014), Vol. 225, No. 1, pp. 192	5.4.1 case b) Relevant but supplementary information: Formulation tested in vivo (Concentrate Roundup Weedkiller, 360 g/L isopropylamine salt, Australia) at high acute doses of 250 - 2500 mg/kg.
644	Xia S. et al.	CA 8.2.3	2013	Induction of vitellogenin gene expression in medaka exposed to glyphosate and potential molecular mechanism	Zhongguo Huanjing Kexue (2013), Vol. 33, No. 9, pp. 1656	5.4.1 case b) Relevant but supplementary information: The study was not conducted according to GLP and a relevant guideline was not followed. The current EU stepwise endocrine approach is detailed, and the approach conducted within this study does conform to the suggested guidance. Significant limitations in the study include a lack of a standard testing approach or specific validation criteria. The test concentrations were not analytically verified and the critical dose regime provided to the Medaka is lacking. Similarly the source of the fish tested is unknown. No clear dose response relationship or derived endpoint from the study could be determined.
645	Xie Rui'Tao et al.	CA 8.2.1, CP 10.2.1	2010	The acute toxicity of five pesticides to yellow catfish <i>Pelteobagrus vachelli</i> .	Fisheries Science (2010), Vol. 29, No. 5, pp. 274	5.4.1 case b) Relevant but supplementary information: Acute effects on Yellow Catfish in a static 96 h test. The application method (preparation of test solution etc.) is not specified. The concentrations used is unclear, and appears to be tested in a range between 7 to 20 mg/L No information on the test item whether it was product or active ingredient was provided. Therefore, the biological results can not be used for the risk assessment.
646	Xu Y. et al.	CA 8.2.8, CP 10.2.3	2010	Acute Toxicity of Ten Pesticides to Larval Red Swamp Crayfish <i>Procambarus Clarkii</i> .	Asian Journal of Ecotoxicology (2010), Vol. 5, No. 1, pp. 50.	5.4.1 case b) Relevant but supplementary information: Effects on red swamp crayfish. Test species raised in and collected from a rice field in Shanghai. It is not clear what exposure the test species may have had to pesticides or other chemicals previously. It is not clear if the glyphosate is technical or product. No biological results (e.g. mortalities) for the control or any test concentration reported. The study is considered unreliable.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
647	Xu Y-g. et al.	CA 8.2.4	2015	Joint Toxicity of Glyphosate and As(III) to Daphnia magna in Aquatic Environment	Journal of Agro-Environment Science (2015), Vol. 34, No. 11, pp. 2076	5.4.1 case b) Relevant but supplementary information: This study concentrates on models used to estimate the individual and mixture toxicity of glyphosate and As (III) to Daphnia magna. LC50 values were compared with measured data. The study was not conducted according to GLP, however the acute toxicity studies were conducted to a relevant ISO guideline. Preparation and dose verification were not performed therefore the endpoint is questionable. The study is considered unreliable.
648	Yan W. et al.	CA 7.1.3.1.1	2018	Molecular Insights into Glyphosate Adsorption to Goethite Gained from ATR-FTIR, Two-Dimensional Correlation Spectroscopy, and DFT Study.	Environmental science & technology (2018), Vol. 52, No. 4, pp. 1946	5.4.1 case b) Relevant but supplementary information: Study of molecular-level interfacial configurations and reaction mechanisms of glyphosate with iron (hydr)oxides. The influence of phosphate is also described.
649	Yang Y. et al.	CA 7.1.3.1.1, CA 7.2.1.3	2018	Comparative study of glyphosate removal on goethite and magnetite: Adsorption and photo-degradation.	Chemical Engineering Journal (2018), Vol. 352, pp. 581	5.4.1 case b) Relevant but supplementary information: Study of photodegradation of glyphosate in environment by goethite and magnetite.
650	You M-J. et al.	CA 5.9.5	2015	Clostridium tertium bacteremia in a patient with glyphosate ingestion.	The American journal of case reports (2015), Vol. 16, pp. 4	5.4.1 case b) Relevant but supplementary information: This article discussed the use of haemodialysis in the management of hyperkalemia and metabolic acidosis after formulated glyphosate overdose. Haemodialysis is often used to manage refractory hyperkalemia and acidosis. This article discusses medical management of suicidal ingestions and therefore should not impact registration decisions.
651	You W-y. et al.	CA 8.3.2, CP 10.3.2	2010	Toxicity Evaluation of Sixteen Herbicides to Bombyx mori.	Asian Journal of Ecotoxicology (2010), Vol. 5, No. 1, pp. 91	5.4.1 case b) Relevant but supplementary information: Effects on silkworm via exposure of treated leaves. However, the application method is not specified. The amount of test solution per leaf, the consumed diet per silkworm and the number of organisms per replicate is unclear. Also no control results are available. Therefore the biological results can not be used for risk assessment.
652	You Y. et al.	CA 5.9.5	2012	Effect of intravenous fat emulsion therapy on glyphosate-surfactant-induced cardiovascular collapse.	The American journal of emergency medicine (2012), Vol. 30, No. 9, pp. 2097.e1	5.4.1 case b) Relevant but supplementary information: This article is discussing the efficacy of intravenous fat emulsion as therapy for formulated glyphosate overdose. This report contributes to the evidence that intravenous fat emulsion may be a useful treatment for glyphosate overdose as it may limit the toxicity associated with large surfactant ingestions. There are no RCTs for this as it is a suicidal overdose situation.
653	Yu G. C. et al.	CA 5.9.5	2017	The clinical analytics of 10 patients with acute glyphosate poisoning	Chinese journal of industrial hygiene and occupational diseases (2017), Vol. 35, No. 5, pp. 382	5.4.1 case b) Relevant but supplementary information: This is a case study describing the clinical course of 10 patients who drank formulated glyphosate. There were no long-term sequelae of ingestion, and all 10 patients survived. These were suicidal ingestions and should not impact re-registration.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
654	Yusof S. et al.	CA 8.2.1	2014	Effect of glyphosate-based herbicide on early life stages of Java medaka (<i>Oryzias latipes</i>): a potential tropical test fish.	Marine pollution bulletin (2014), Vol. 85, No. 2, pp. 49	5.4.1 case b) Relevant but supplementary information: There is insufficient explanation provided on the analytical verification of the test concentrations. The test concentrations were high ranging from 100 to 500 ppm. A regulatory endpoint is not available. There is no verification of dose levels, and the study does not conform to any guidelines nor GLP. The article can be considered as supplementary information only.
655	Zhang C. et al.	CA 5.9.4	2016	Health effect of agricultural pesticide use in China: implications for the development of GM crops	Scientific reports (2016) Vol. 6, pp. 34918	5.4.1 case b) Relevant but supplementary information: Results are likely to be valid for glyphosate under the exposure circumstances of the study, however the study was not appropriately designed for assessment of chronic health effects. In particular, there were short follow-ups and limited exposure histories.
656	Zhang C. et al.	CA 5.9.4	2018	A comparison of the effects of agricultural pesticide uses on peripheral nerve conduction in China	Scientific Reports (2018), Vol. 8, No. 1, pp. 1	5.4.1 case b) Relevant but supplementary information: Results agree with biological properties of the various pesticides. However, an inappropriate design to study the potentially chronic association between nerve conduction and pesticide exposure. There was short follow-up and limited exposure histories.
657	Zhang F. et al.	CA 5.9.1	2019	Study on the effect of occupational exposure to glyphosate on blood routine.	Chinese journal of industrial hygiene and occupational diseases (2019), Vol. 37, No. 2, pp. 126	5.4.1 case b) Relevant but supplementary information: No adverse outcome identified.
658	Zhang F. et al.	CA 5.9.2	2018	Relationships between internal and external exposure indicators of glyphosate in occupational workers.	Journal of Environmental & Occupational Medicine (2018), Vol. 35, No. 11, pp. 990	5.4.1 case b) Relevant but supplementary information: Manufacturing practices in China are not representative of EU manufacturing protocols
659	Zhang F. et al.	CA 5.9.4	2017	Study of the effect of occupational exposure to glyphosate on hepatorenal function.	Chinese journal of preventive medicine (2017), Vol. 51, No. 7, pp. 615	5.4.1 case b) Relevant but supplementary information: Poorly described study design, methods, and analysis. This publication is considered unreliable.
660	Zhang K. et al.	CA 7.1.4	2019	Can we use a simple modelling tool to validate stormwater biofilters for herbicides treatment?	Urban Water Journal (2019), Vol. 16, pp. 412	5.4.1 case b) Relevant but supplementary information: Biofilter validation model. Field validation work performed in Australia. Model may be of interest even though field data not directly relevant to the EU.
661	Zhang L. et al.	CA 5.9.4	2019	Exposure to glyphosate-based herbicides and risk for non-Hodgkin lymphoma: A meta-analysis and supporting evidence	Mutation Research, Reviews in Mutation Research (2019), Vol. 781, pp. 186	5.4.1 case b) Relevant but supplementary information: Meta-analyses cannot overcome the limitations of the studies included. This publication is considered unreliable.
662	Zhang Q. et al.	CA 8.3.2, CP 10.3.2	2011	An evaluation on acute toxicity of 29 pesticides to <i>Bombyx mori</i>	Canye Kexue (2011), Vol. 37, No. 2, pp. 343	5.4.1 case b) Relevant but supplementary information: Effects of glyphosate (95% TC) on silkworms by using the leaf dipping method: 5 g mulberry leaves were evenly immersed in 10 mL test solution for 10s. However, no useful concentration can be derived. No control results available.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
663	Zhang S. et al.	CA 8.2.1	2017	Biological impacts of glyphosate on morphology, embryo biomechanics and larval behavior in zebrafish (Danio rerio).	Chemosphere (2017), Vol. 181, pp. 270	5.4.1 case b) Relevant but supplementary information: Provides information on a test species that is relied upon in the risk assessment. But endpoints cannot be related to an EU level ecotox risk assessment.
664	Zhang W. et al.	CA 7.1.4.1.1, CA 7.1.4.1.2, CA 7.2.1.1	2019	A method for determining glyphosate and its metabolite aminomethyl phosphonic acid by gas chromatography-flame photometric detection.	Journal of chromatography. A (2019), Vol. 1589, pp. 116	5.4.1 case b) Relevant but supplementary information: Primarily an analytical methods paper with examples of hydrolysis and column leaching data provided. Insufficient methodology information provided for risk assessment.
665	Zhao H. et al.	CA 5.8.3	2018	Effects of Glyphosate on Testosterone Synthesis in Male Rats.	Asian Journal of Ecotoxicology (2018), Vol. 13, No. 5, pp. 242	5.4.1 case b) Relevant but supplementary information: Reporting of the experimental conditions is not complete.
666	Zhao W. et al.	CA 5.8.2	2011	Effect of glyphosate on oxidative damage of mice	Dulixue Zazhi (2011), Vol. 25, No. 5, pp. 364	5.4.1 case b) Relevant but supplementary information: No new information relevant for the risk assessment.
667	Zhao Y. et al.	CA 7.1.3.1.1	2015	Use of Fe/Al drinking water treatment residuals as amendments for enhancing the retention capacity of glyphosate in agricultural soils.	Journal of environmental sciences (2015), Vol. 34, pp. 133	5.4.1 case b) Relevant but supplementary information: Use of Fe/Al drinking water treatment residuals (WTRs) as a soil amendment to increase glyphosate sorption and decrease desorption in soils. Supplementary information not directly related to efate guideline studies.
668	Zheng Q. et al.	CA 5.9.2	2018	Reversible Parkinsonism induced by acute exposure glyphosate.	Parkinsonism & related disorders (2018), Vol. 50, pp. 121	5.4.1 case b) Relevant but supplementary information: Reversible Parkinsonism in case of acute in-toxication is a well-known effect and not specific for glyphosate.
669	Zheng Q. et al.	CA 5.9.2	2018	Reply for the comment on "Reversible Parkinsonism induced by acute exposure glyphosate".	Parkinsonism and Related Disorders (2018), Vol. 56, pp. 108	5.4.1 case b) Relevant but supplementary information: Letter to the editor, comments on Goldstein_2018, Parkinsonism Relat Disord. (2018), Vol. 56, pp. 107
670	Zouaoui K. et al.	CA 5.9.5	2013	Determination of glyphosate and AMPA in blood and urine from humans: about 13 cases of acute intoxication.	Forensic science international (2013), Vol. 226, No. 1-3, pp. E20	5.4.1 case b) Relevant but supplementary information: This report demonstrates a link between higher blood and urine concentrations with formulated glyphosate overdoses and a poorer outcome. This is unsurprising as it reflects that patients drank a larger volume. Larger volumes of formulated product are associated with more toxicity due to the caustic nature of the surfactant, not the amount of active ingredient. All of the laboratory parameters are expected in critically ill patients. As these were suicidal ingestions, this paper should not impact re-registration.
671	Zyoud S. H. et al.	CA 5.9.5	2017	Global research production in glyphosate intoxication from 1978 to 2015: A bibliometric analysis.	Human & experimental toxicology (2017), Vol. 36, No. 10, pp. 997	5.4.1 case b) Relevant but supplementary information: This article analyzes the reports of increase in glyphosate intoxications from the early 1970s-2016. Given the increase in use over the same time period it is not surprising that there has been an increase in reporting. This should not impact re-registration.

Table 36: Articles of unclear relevance (category C) after detailed assessment: sorted by data requirement(s)

No	Data requirement (indicated by the corresponding CA / CP data point No.)	Author(s)	Year	Title	Source	Justification
673	CA 5.3	Aitbali Y. et al.	2018	Glyphosate based- herbicide exposure affects gut microbiota, anxiety and depression-like behaviors in mice.	Neurotoxicology and teratology (2018), Vol. 67, pp. 44	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study uses Roundup administered at half of or at the NOAEL concentration via a stomach tube. The surfactant is irritating and any negative results are not surprising. The acidic effect of glyphosate is also a concern.
675	CA 5.8	Bote K. et al.	2019	Minimum Inhibitory Concentration of Glyphosate and of a Glyphosate-Containing Herbicide Formulation for Escherichia coli Isolates - Differences Between Pathogenic and Non-pathogenic Isolates and Between Host Species.	Frontiers in microbiology (2019), Vol. 10, pp. 932	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. The study uses a system designed to measure antibiotic MICs that are usually done by culturing bacteria in a specific media for antibiotic diffusion in ug/ml range. Instead the paper looks at glyphosate in mg/ml range following MIC procedures. There is no justification for the dose, which should be at about 100000X lower dose. Most gut microbes microbes are anaerobes.
680	CA 5.8	Kruger M. et al.	2013	Glyphosate suppresses the antagonistic effect of Enterococcus spp. on Clostridium botulinum.	Anaerobe (2013), Vol. 20, pp. 74	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. Moreover, the doses used in this study are not justified and are unrealistically high. Cultures are batch culture and it is unclear if conditions are to get values in growing phase. Comparisons between glyphosate and Roundup are completely different so they cannot be compared.
679	CA 5.8.2	Good P.	2018	Evidence the U.S. autism epidemic initiated by acetaminophen (Tylenol) is aggravated by oral antibiotic amoxicillin/clavulanate (Augmentin) and now exponentially by herbicide glyphosate (Roundup).	Clinical nutrition ESPEN (2018), Vol. 23, pp. 171	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This paper contains no new data. It uses computer algorithms to make associations that are not proved. It claims that glyphosate impacts methionine and tryptophan and ignores that these amino acids are not only essential for the human diet but that microbially derived amino acids are only available via coprophagy.

No	Data requirement (indicated by the corresponding CA / CP data point No.)	Author(s)	Year	Title	Source	Justification
681	CA 5.8.2	Lozano V. L. et al.	2018	Sex-dependent impact of Roundup on the rat gut microbiome.	Toxicology reports (2018), Vol. 5, pp. 96	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study has a number of issues related to design: Rats are at the end of their life when feces were sampled. It is not clear of feces were sampled pre- or post mortem. Results are confounded by advanced age or even tumor status of these rats, predominantly mammary. The smaller than expected number of phyla may be related to age of the rats. Short-term responses are not surprising: cells in direct contact with a substance in a test tube (liquid medium) will respond differently than cells exposed to that same substance within their natural environment. So in vitro data usually show cells have a greater sensitivity to the substance than in vivo data. And within the intestinal environment there is much to dilute, diminish or mask the substance's effect. This diminished effect in vivo has been documented repeatedly for a large number of test substances.
682	CA 5.8.2	Mao Q. et al.	2018	The Ramazzini Institute 13-week pilot study on glyphosate and Roundup administered at human-equivalent dose to Sprague Dawley rats: effects on the microbiome.	Environmental Health (2018), Vol. 29, No. 17, pp 50	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. In this publication there was no clinical evidence of alterations in activity or behavior in pups. Body weight, water and feed consumption both in dams and pups were no different across the groups. Litter sizes were fully comparable among groups. To identify changes in microbes with multiple analyses in groups of animals is not unexpected and not necessarily indicative of a specific effect of the active substance. Changes within all rats due to maturation are greater than the differences between treatment groups. Moreover there are several points limiting the significance of the results: 1) information to calculate dose is not in the paper and seems intentional, 2) ADI is not the same as exposure which averages 1% of the ADI, and clinical signs were by definition not observed at the NOAEL which is 100-fold greater than the ADI. Animals in these toxicity studies had gut microbes, 3) Claims of exposure via milk are unfounded. The statistical analysis results in some differences but they do not put these changes into the context of whether they are normal.

No	Data requirement (indicated by the corresponding CA / CP data point No.)	Author(s)	Year	Title	Source	Justification
672	CA 6.4	Ackermann W. et al.	2015	The influence of glyphosate on the microbiota and production of botulinum neurotoxin during ruminal fermentation.	Current microbiology (2015), Vol. 70, No. 3, pp. 374.	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. The system used in this study was not developed for microbiological research. Instead it was developed for comparing rates of digestion of feed. It is not a dynamic system like a rumen but a batch culture system. In 48 hrs they showed that adding glyphosate resulted in greater drops in pH as a result of inadequate buffering. The endpoints are consistent with decreased pH. They are inconsistent with more sophisticated rumen simulation techniques that found no effects from glyphosate.
676	CA 6.4	Bote K. et al.	2019	Effect of a Glyphosate-Containing Herbicide on <i>Escherichia coli</i> and <i>Salmonella</i> Ser. Typhimurium in an In Vitro Rumen Simulation System.	European journal of microbiology & immunology, (2019), Vol. 9, No. 3, pp. 94	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study used a rumen simulation technique that reasonably replicated rumen conditions that allowed for dynamic effects of feeding and removal of waste products. In the absence of a suitable dossier datapoint it was allocated to point CA 6.4 as it concerns livestock. However, it is important to note that it is not a residue study and does not provide any data on the transfer of residues from feed to food of animal origin.
678	CA 6.4	Gerlach H. et al.	2014	Oral application of charcoal and humic acids to dairy cows influences Clostridium botulinum blood serum antibody level and glyphosate excretion in urine.	Journal of Clinical Toxicology (2014), Vol. 4, No. 2, pp. 186	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. Additionally there significant deficiencies (lack of control group, treatments). Glyphosate concentrations in urine would be highly impacted by urine volume which is affected by milk production and environmental temperature. Interestingly, aerobes from feces are tested and ruminants rely on strict anaerobes in the rumen and colon.
684	CA 6.4	Nielsen L. N. c. r. et al.	2017	Glyphosate has limited short-term effects on commensal bacterial community composition in the gut environment due to sufficient aromatic amino acid levels	Environmental pollution (2018), Vol. 233, pp. 364	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study shows that aromatic amino acids in culture conditions can negate impact on gut microbes from glyphosate because microbes with sensitive EPSPS can get these amino acids from the media.
685	CA 6.4	Riede S. et al.	2016	Investigations on the possible impact of a glyphosate-containing herbicide on ruminal metabolism and bacteria in vitro by means of the 'Rumen Simulation Technique'.	Journal of applied microbiology (2016), Vol. 121, No. 3, pp. 644	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. In this study a system was developed for studying ruminal organisms that is dynamic, used mixed population of microbes, and is periodically fed with removal of waste products. There were no impacts of glyphosate formulation to this system.

No	Data requirement (indicated by the corresponding CA / CP data point No.)	Author(s)	Year	Title	Source	Justification
686	CA 6.4	Schrodl W. et al.	2014	Possible effects of glyphosate on <i>Mucorales</i> abundance in the rumen of dairy cows in Germany.	Current microbiology (2014), Vol. 69, No. 6, pp. 817	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. Methodological shortcomings of the approaches used reduce the significance of the results (rumen fungi are strictly anaerobic, but they use aerobic cultures; 2) spot-urine concentrations are highly affected by the level of milk production 3) the ELISA is not validated and the LOD was not used, no validation is described for other assays.
687	CA 6.4	Shehata A. A. et al.	2014	Neutralization of the antimicrobial effect of glyphosate by humic acid in vitro.	Chemosphere (2014), Vol. 104, pp. 258	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. In the absence of a suitable dossier datapoint it was allocated to point CA 6.4 as it concerns livestock. However, it is important to note that it is not a residue study and does not provide any data on the transfer of residues from feed to food of animal origin.
688	CA 6.4	Shehata A. A. et al.	2013	The effect of glyphosate on potential pathogens and beneficial members of poultry microbiota in vitro.	Current microbiology (2013), Vol. 66, No. 4, pp. 350	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. The publication does not provide new information (potential effects on microorganisms with sensitive EPSs are well known) and real world conditions of the gut are not replicated (study conducted on minimal media; microorganisms exposed to extremely high doses of glyphosate (1000x); aged cultures inducing additional stress).
689	CA 6.4	Vicini J. L. et al.	2019	Glyphosate in livestock: feed residues and animal health.	Journal of animal science (2019), Vol. 97, No. 11, pp. 4509	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. Review article.
677	CA 6.5	Clair E. et al.	2012	Effects of Roundup® and glyphosate on three food microorganisms: <i>Geotrichum candidum</i> , <i>Lactococcus lactis</i> subsp. <i>cremoris</i> and <i>Lactobacillus delbrueckii</i> subsp. <i>bulgaricus</i> .	Current microbiology (May), Vol. 64, No. 5, pp. 486	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. However, based on the results presented, it is not possible to reach a scientifically sound conclusion that the ability to make cheese using these organisms has been compromised by Roundup formulations. Application of dilutions (1%) of glyphosate were shown to inhibit a yeast-like organism, which is unsurprising. Surfactant solutions are routinely used to sanitize food processing equipment at concentrations at or above those tested by Clair et al. These concentrations are vastly higher than the concentrations of glyphosate or possible surfactant present (if any) in incoming milk.

No	Data requirement (indicated by the corresponding CA / CP data point No.)	Author(s)	Year	Title	Source	Justification
690	CA 8.2.8	Yang X. et al.	2019	Effects of the glyphosate-based herbicide roundup on the survival, immune response, digestive activities and gut microbiota of the Chinese mitten crab, <i>Eriocheir sinensis</i>	Aquatic toxicology (2019), Vol. 214, pp. 105243	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study uses a high dose of roundup formulation. The surfactants in Roundup are known to be toxic to aquatic animals. This publication indicates a potentially significant decline in survival due to Roundup. Therefore, results obtained for other endpoints beyond survival may be secondary to known toxicity of the surfactants.
674	CA 8.3.1.2	Blot N. et al.	2019	Glyphosate, but not its metabolite AMPA, alters the honeybee gut microbiota	PLoS one (2019), Vol. 14, No. 4, pp. e0215466	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. In this publication, experiments were conducted with a dose (10x increased) and an exposure for a longer period than is expected to occur from field exposure. Results indicated no effect on survival but some effect on profile of gut microbes. AMPA did not affect profile which could be due to AMPA does not inhibit EPSs.
683	CA 8.3.1.2	Motta E. V. S. et al.	2018	Glyphosate perturbs the gut microbiota of honey bees.	Proceedings of the National Academy of Sciences of the United States of America (2018), Vol. 115, No. 41, pp. 10305	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This paper describes exposure of bees to glyphosate and its impact on gut microbiota.

Table 37: Articles of unclear relevance (category C) after detailed assessment: sorted by author(s)

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point No.)	Year	Title	Source	Justification
672	Ackermann W. et al.	CA 6.4	2015	The influence of glyphosate on the microbiota and production of botulinum neurotoxin during ruminal fermentation.	Current microbiology (2015), Vol. 70, No. 3, pp. 374.	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. The system used in this study was not developed for microbiological research. Instead it was developed for comparing rates of digestion of feed. It is not a dynamic system like a rumen but a batch culture system. In 48 hrs they showed that adding glyphosate resulted in greater drops in pH as a result of inadequate buffering. The endpoints are consistent with decreased pH. They are inconsistent with more sophisticated rumen simulation techniques that found no effects from glyphosate.
673	Aitbali Y. et al.	CA 5.3	2018	Glyphosate based- herbicide exposure affects gut microbiota, anxiety and depression-like behaviors in mice.	Neurotoxicology and teratology (2018), Vol. 67, pp. 44	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study uses Roundup administered at half of or at the NOAEL concentration via a stomach tube. The surfactant is irritating and any negative results are not surprising. The acidic effect of glyphosate is also a concern.
674	Blot N. et al.	CA 8.3.1.2	2019	Glyphosate, but not its metabolite AMPA, alters the honeybee gut microbiota	PloS one (2019), Vol. 14, No. 4, pp. e0215466	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. In this publication, experiments were conducted with a dose (10x increased) and an exposure for a longer period than is expected to occur from field exposure. Results indicated no effect on survival but some effect on profile of gut microbes. AMPA did not affect profile which could be due to AMPA does not inhibit EPSs.
675	Bote K. et al.	CA 5.8	2019	Minimum Inhibitory Concentration of Glyphosate and of a Glyphosate-Containing Herbicide Formulation for Escherichia coli Isolates - Differences Between Pathogenic and Non-pathogenic Isolates and Between Host Species.	Frontiers in microbiology (2019), Vol. 10, pp. 932	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. The study uses a system designed to measure antibiotic MICs that are usually done by culturing bacteria in a specific media for antibiotic diffusion in µg/ml range. Instead the paper looks at glyphosate in mg/ml range following MIC procedures. There is no justification for the dose, which should be at about 100000X lower dose. Most gut microbes microbes are anaerobes.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point No.)	Year	Title	Source	Justification
676	Bote K. et al.	CA 6.4	2019	Effect of a Glyphosate-Containing Herbicide on <i>Escherichia coli</i> and <i>Salmonella</i> Ser. Typhimurium in an In Vitro Rumen Simulation System.	European journal of microbiology & immunology, (2019), Vol. 9, No. 3, pp. 94	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study used a rumen simulation technique that reasonably replicated rumen conditions that allowed for dynamic effects of feeding and removal of waste products. In the absence of a suitable dossier datapoint it was allocated to point CA 6.4 as it concerns livestock. However, it is important to note that it is not a residue study and does not provide any data on the transfer of residues from feed to food of animal origin.
677	Clair E. et al.	CA 6.5	2012	Effects of Roundup® and glyphosate on three food microorganisms: <i>Geotrichum candidum</i> , <i>Lactococcus lactis</i> subsp. cremoris and <i>Lactobacillus delbrueckii</i> subsp. <i>bulgaricus</i> .	Current microbiology (May), Vol. 64, No. 5, pp. 486	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. However, based on the results presented, it is not possible to reach a scientifically sound conclusion that the ability to make cheese using these organisms has been compromised by Roundup formulations. Application of dilutions (1%) of glyphosate were shown to inhibit a yeast-like organism, which is unsurprising. Surfactant solutions are routinely used to sanitize food processing equipment at concentrations at or above those tested by Clair et al. These concentrations are vastly higher than the concentrations of glyphosate or possible surfactant present (if any) in incoming milk.
678	Gerlach H. et al.	CA 6.4	2014	Oral application of charcoal and humic acids to dairy cows influences <i>Clostridium botulinum</i> blood serum antibody level and glyphosate excretion in urine.	Journal of Clinical Toxicology (2014), Vol. 4, No. 2, pp. 186	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. Additionally there significant deficiencies (lack of control group, treatments). Glyphosate concentrations in urine would be highly impacted by urine volume which is affected by milk production and environmental temperature. Interestingly, aerobes from feces are tested and ruminants rely on strict anaerobes in the rumen and colon.
679	Good P.	CA 5.8.2	2018	Evidence the U.S. autism epidemic initiated by acetaminophen (Tylenol) is aggravated by oral antibiotic amoxicillin/clavulanate (Augmentin) and now exponentially by herbicide glyphosate (Roundup).	Clinical nutrition ESPEN (2018), Vol. 23, pp. 171	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This paper contains no new data. It uses computer algorithms to make associations that are not proved. It claims that glyphosate impacts methionine and tryptophan and ignores that these amino acids are not only essential for the human diet but that microbially derived amino acids are only available via coprophagy.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point No.)	Year	Title	Source	Justification
680	Kruger M. et al.	CA 5.8	2013	Glyphosate suppresses the antagonistic effect of <i>Enterococcus</i> spp. on <i>Clostridium botulinum</i> .	Anaerobe (2013), Vol. 20, pp. 74	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. Moreover, the doses used in this study are not justified and are unrealistically high. Cultures are batch culture and it is unclear if conditions are to get values in growing phase. Comparisons between glyphosate and Roundup are completely different so they cannot be compared.
681	Lozano V. L. et al.	CA 5.8.2	2018	Sex-dependent impact of Roundup on the rat gut microbiome.	Toxicology reports (2018), Vol. 5, pp. 96	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study has a number of issues related to design: Rats are at the end of their life when feces were sampled. It is not clear of feces were sampled pre- or post mortem. Results are confounded by advanced age or even tumor status of these rats, predominantly mammary. The smaller than expected number of phyla may be related to age of the rats. Short-term responses are not surprising: cells in direct contact with a substance in a test tube (liquid medium) will respond differently than cells exposed to that same substance within their natural environment. So in vitro data usually show cells have a greater sensitivity to the substance than in vivo data. And within the intestinal environment there is much to dilute, diminish or mask the substance's effect. This diminished effect in vivo has been documented repeatedly for a large number of test substances.
682	Mao Q. et al.	CA 5.8.2	2018	The Ramazzini Institute 13-week pilot study on glyphosate and Roundup administered at human-equivalent dose to Sprague Dawley rats: effects on the microbiome.	Environmental Health (2018), Vol. 29, No. 17, pp 50	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. In this publication there was no clinical evidence of alterations in activity or behavior in pups. Body weight, water and feed consumption both in dams and pups were no different across the groups. Litter sizes were fully comparable among groups. To identify changes in microbes with multiple analyses in groups of animals is not unexpected and not necessarily indicative of a specific effect of the active substance. Changes within all rats due to maturation are greater than the differences between treatment groups. Moreover there are several points limiting the significance of the results: 1) information to calculate dose is not in the paper and seems intentional, 2) ADI is not the same as exposure which averages 1% of the ADI, and clinical signs were by definition not observed at the NOAEL which is 100-fold greater than the ADI. Animals in these toxicity studies had gut microbes, 3) Claims of exposure via milk are unfounded. The statistical analysis results in some differences but they do not put these changes into the context of whether they are normal.

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point No.)	Year	Title	Source	Justification
683	Motta E. V. S. et al.	CA 8.3.1.2	2018	Glyphosate perturbs the gut microbiota of honey bees.	Proceedings of the National Academy of Sciences of the United States of America (2018), Vol. 115, No. 41, pp. 10305	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This paper describes exposure of bees to glyphosate and its impact on gut microbiota.
684	Nielsen L. N. c. r. et al.	CA 6.4	2017	Glyphosate has limited short-term effects on commensal bacterial community composition in the gut environment due to sufficient aromatic amino acid levels	Environmental pollution (2018), Vol. 233, pp. 364	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study shows that aromatic amino acids in culture conditions can negate impact on gut microbes from glyphosate because microbes with sensitive EPSPS can get these amino acids from the media.
685	Riede S. et al.	CA 6.4	2016	Investigations on the possible impact of a glyphosate-containing herbicide on ruminal metabolism and bacteria in vitro by means of the 'Rumen Simulation Technique'.	Journal of applied microbiology (2016), Vol. 121, No. 3, pp. 644	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. In this study a system was developed for studying ruminal organisms that is dynamic, used mixed population of microbes, and is periodically fed with removal of waste products. There were no impacts of glyphosate formulation to this system.
686	Schrodl W. et al.	CA 6.4	2014	Possible effects of glyphosate on Mucorales abundance in the rumen of dairy cows in Germany.	Current microbiology (2014), Vol. 69, No. 6, pp. 817	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. Methodological shortcomings of the approaches used reduce the significance of the results (rumen fungi are strictly anaerobic, but they use aerobic cultures; 2) spot-urine concentrations are highly affected by the level of milk production 3) the ELISA is not validated and the LOD was not used, no validation is described for other assays.
687	Shehata A. A. et al.	CA 6.4	2014	Neutralization of the antimicrobial effect of glyphosate by humic acid in vitro.	Chemosphere (2014), Vol. 104, pp. 258	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. In the absence of a suitable dossier datapoint it was allocated to point CA 6.4 as it concerns livestock. However, it is important to note that it is not a residue study and does not provide any data on the transfer of residues from feed to food of animal origin.
688	Shehata A. A. et al.	CA 6.4	2013	The effect of glyphosate on potential pathogens and beneficial members of poultry microbiota in vitro.	Current microbiology (2013), Vol. 66, No. 4, pp. 350	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. The publication does not provide new information (potential effects on microorganisms with sensitive EPSPS are well known) and real world conditions of the gut are not replicated (study conducted on minimal media; microorganisms exposed to extremely high doses of glyphosate (1000x); aged cultures inducing additional stress).

No	Author(s)	Data requirement (indicated by the corresponding CA / CP data point No.)	Year	Title	Source	Justification
689	Vicini J. L. et al.	CA 6.4	2019	Glyphosate in livestock: feed residues and animal health.	Journal of animal science (2019), Vol. 97, No. 11, pp. 4509	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. Review article.
690	Yang X. et al.	CA 8.2.8	2019	Effects of the glyphosate-based herbicide roundup on the survival, immune response, digestive activities and gut microbiota of the Chinese mitten crab, <i>Eriocheir sinensis</i>	Aquatic toxicology (2019), Vol. 214, pp. 105243	5.4.1 case c) Relevance cannot be determined: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. This study uses a high dose of roundup formulation. The surfactants in Roundup are known to be toxic to aquatic animals. This publication indicates a potentially significant decline in survival due to Roundup. Therefore, results obtained for other endpoints beyond survival may be secondary to known toxicity of the surfactants.

Table 38: Articles excluded after detailed assessment (i.e. not relevant): sorted by technical section (and by author)

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
691	Ecotoxicology	Abalaka M. E. et al.	2015	Effects of pesticides on the micro-flora of loamy soil obtained from biological garden, federal university of technology, minna, Nigeria	Advance in Agriculture and Biology (2015), Vol. 4, No. 3, pp. 106-113	Presented data cannot be related to an EU level ANNEX I risk assessment (microbial population study).
692	Ecotoxicology	Abdulkareem S. I. et al.	2014	Effect of lethal and sub-lethal concentrations of glyphosate on some biochemical parameters and growth responses of African catfish (<i>Clarias gariepinus</i>).	Egyptian Academic Journal of Biological Sciences B Zoology (2014), Vol. 6, No. 2, pp. 47-54	Endpoints are not relatable to an EU level risk assessment. No information provided on the levels of exposure presented.
693	Ecotoxicology	Abraham J. et al.	2018	Commercially formulated glyphosate can kill non-target pollinator bees under laboratory conditions.	Entomologia Experimentalis et Applicata (2018), Vol. 166, No. 8, pp. 695-702	The study was conducted using Sunphosate 360 SL, which is not the representative formulation for the EU renewal at Annex I.
694	Ecotoxicology	Achiomo C. L. et al.	2018	Susceptibility of <i>Chordodes nobilii</i> (Gordiida, Nematomorpha) to three pesticides: Influence of the water used for dilution on endpoints in an ecotoxicity bioassay.	Environmental pollution (2018), Vol. 242, No. Pt B, pp. 1427-1435	This paper describes the conduct of aquatic toxicity assays using naturally collected waters from the countries of interest. Infection rate of hosts was also assessed as an endpoint. Roundup that contains POEA was also used in the study. This surfactant is not in the representative formulation for the Annex I renewal.
695	Ecotoxicology	Ada F. B. et al.	2013	Ganado-hepato-somatic index of <i>Oreochromis niloticus</i> sub adults exposed to some herbicides	International Journal of Aquaculture (2013), Vol. 3, No. 11	Endpoints based on gonadosomatic and hepatosomatic indexes are not used in the EU level ecotoxicological risk assessment for Annex I renewal.
696	Ecotoxicology	Afrifa A. A. et al.	2010	The effects of benomyl and glyphosate treated plant litter on nitrogen mineralization in mollisols.	West African Journal of Applied Ecology (2010), Vol. 17, pp. 143-152	In this study both glyphosate and a fungicide product are applied simultaneously to tomato plants. As this assesses combined effects this study is not relevant to the renewal of glyphosate.
697	Ecotoxicology	Agostini M. G. et al.	2020	Pesticides in the real world: The consequences of GMO-based intensive agriculture on native amphibians	Biological Conservation (2020), Vol. 241, Article ID 108355	This paper looks at the impact of mixtures of pesticides rather than single actives. Therefore it is not relevant to the EU renewal of glyphosate at EU level
698	Ecotoxicology	Ahemad M. et al.	2012	Evaluation of plant-growth-promoting activities of rhizobacterium and <i>Pseudomonas putida</i> under herbicide stress	Annals of microbiology (2012), Vol. 62, No. 4, pp. 1531-1540	This paper discusses the impact of herbicides on the plant growth promoting activities of soil borne bacteria in the root zone. It is not relateable to an EU ecotoxicological risk assessment.
699	Ecotoxicology	Akcha F. et al.	2012	Genotoxicity of diuron and glyphosate in oyster spermatozoa and embryos.	Aquatic toxicology (2012), Vol. 106-107, pp. 104-13	Endpoints derived from genotoxic screening and based upon parameters not considered relevant to EU renewal level assessment.
700	Ecotoxicology	Albajes R. et al.	2011	Two heteropteran predators in relation to weed management in herbicide-tolerant corn.	Biological Control (2011), Vol. 59, No. 1, pp. 30-36	This study was not conducted to a relevant guideline. The test substance was identified as MON 78044, but no other test item information is provided (e.g. purity). The results of the study cannot clearly be related to the glyphosate treatments as multiple products were applied, the work is not GLP compliant and there is insufficient analytical documentation to confirm exposure.
701	Ecotoxicology	Alcantara-de la Cruz R. et al.	2017	Side-effects of pesticides on the generalist endoparasitoid <i>Palmistichus elaeis</i> (Hymenoptera: Eulophidae).	Scientific Reports (2017), Vol. 7, No. 1, pp. 10064	This paper discusses the influence of trait modified crops sprayed with glyphosate on biological control agents. It is not relateable to an EU level risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
702	Ecotoxicology	Al-Daikh E. B. et al.	2016	Effect of glyphosate herbicide on the behavior of soil arthropods in non-organic tomato system	Advance in Agriculture and Biology (2016), Vol. 5, No. 1, pp. 14-19	Endpoints presented cannot be related to an EU level risk assessment for Annex I renewal.
703	Ecotoxicology	Allegrini M. et al.	2015	Ecotoxicological assessment of soil microbial community tolerance to glyphosate.	The Science of the total environment (2015), Vol. 533, pp. 60-8	Novel test design / approach - not relatable to an EU level ecotoxicological risk assessment for Annex I renewal.
704	Ecotoxicology	Allegrini M. et al.	2019	Suppression treatment differentially influences the microbial community and the occurrence of broad host range plasmids in the rhizosphere of the model cover crop Avena sativa L	PLoS one (2019), Vol. 14, No. 10, pp. e0223600	Endpoints type is not considered at the EU level risk assessment and cannot be related to levels of exposure anticipated following application according to the proposed GAP.
705	Ecotoxicology	Allegrini M. et al.	2017	Repeated glyphosate exposure induces shifts in nitrifying communities and metabolism of phenylpropanoids	Soil biology & biochemistry (2017), Vol. 105, pp. 206-215	Approaches used cannot be related to an EU level ecotoxicological risk assessment for Annex I renewal.
706	Ecotoxicology	Alleva R. et al.	2016	Organic honey supplementation reverses pesticide-induced genotoxicity by modulating DNA damage response.	Molecular nutrition & food research (2016), Vol. 60, No. 10, pp. 2243-2255	Not related directly to the effects of glyphosate, but to the impact of polyphenols extracted from honey on human epithelial cells. Not relevant to EU level ecotoxicological risk assessment.
707	Ecotoxicology	Al-Sultany D. A. A. et al.	2019	Effects of contaminated water with glyphosate herbicides on the external and behavioral characteristics of common carp, <i>Cyprinus Carpio</i> Linnaeus.	Biochemical and Cellular Archives (2019), Vol. 19, No. 1, pp. 1475-1480	Methodology presented cannot be related to the results provided. Exposure rates cannot be related to the EU level assessment. No glyphosate formulation / product details presented.
708	Ecotoxicology	Amaral M. J. et al.	2012	The usefulness of mesocosms for ecotoxicity testing with lacertid lizards.	Acta Herpetologica (2012), Vol. 7, No. 2, pp. 263-280	Long term monitoring study on lizards maintained in outdoor mesocosms exposed to multiple pesticides. Endpoints cannot be related to an EU level ecotoxicological risk assessment for ANNEX I renewal of glyphosate.
709	Ecotoxicology	Amid C. et al.	2018	Additive effects of the herbicide glyphosate and elevated temperature on the branched coral <i>Acropora formosa</i> in Nha Trang, Vietnam.	Environmental science and pollution research international (2018), Vol. 25, No. 14, pp. 13360-13372	The paper discusses the combined impact of multiple stressors on coral bleaching, when exposed to a formulation that is not the representative formulation for the Annex I renewal. The study compares effects of the product on bleaching of corals at two different temperatures.
710	Ecotoxicology	Anbalagan C. et al.	2013	Use of transgenic GFP reporter strains of the nematode <i>Caenorhabditis elegans</i> to investigate the patterns of stress responses induced by pesticides and by organic extracts from agricultural soils.	Ecotoxicology (2013), Vol. 22, No. 1, pp. 72-85	Study provides information on cellular / molecular level and is not ecotoxicologically relevant study
711	Ecotoxicology	Antoniolli Z. I. et al.	2013	Heavy metal, pesticides and fuels: effect in the population of collembola in the soil. Original Title: Metais pesados, agrotóxicos e combustíveis: efeito na população de colêmbolos no solo.	Ciencia Rural (2013), Vol. 43, No. 6, pp. 992-998	Concerns exposure to a glyphosate formulation (not the representative formulation) in the presence of metals, and in mixtures. It is not relevant to an EU level risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
712	Ecotoxicology	Antunes S. C. et al.	2010	Structural effects of the bioavailable fraction of pesticides in soil: suitability of elutriate testing.	Journal of hazardous materials (2010), Vol. 184, No. 1-3, pp. 215-25	The endpoint cannot be ascertained for glyphosate alone as other active substances are also used in the field study. The glyphosate product used (Montana) is not a representative product.
713	Ecotoxicology	Armiliato N. et al.	2014	Changes in ultrastructure and expression of steroidogenic factor-1 in ovaries of zebrafish <i>Danio rerio</i> exposed to glyphosate.	Journal of toxicology and environmental health. Part A (2014), Vol. 77, No. 7, pp. 405-14	Endpoint cannot be related to an EU level risk assessment.
714	Ecotoxicology	Asgari S. M. et al.	2018	Organophosphorus pesticides induced enzymological responses in the various tissues of freshwater fish Koi carp (<i>Cyprinus carpio</i>)	European Journal of Zoological Research (2018), Vol. 6, No. 1, pp. 17-24	This study described the Biological impacts on enzyme levels in fish blood, are not used in an EU level ecotoxicological risk assessment.
715	Ecotoxicology	Avigliano L. et al.	2014	Effects of glyphosate on egg incubation, larvae hatching, and ovarian rematuration in the estuarine crab <i>Neohelice granulata</i>	Environmental Toxicology and Chemistry (2014), Vol. 33, no. 8, pp. 1879	Article discusses effects of formulated product on crab development. Endpoints are not reliable to an EU level risk assessment as specific endpoints are not discussed.
716	Ecotoxicology	Avigliano L. et al.	2018	Effects of Glyphosate on Somatic and Ovarian Growth in the Estuarine Crab <i>Neohelice granulata</i> , During the Pre-Reproductive Period	Water, air, and soil pollution (2018), Vol. 229, No. 2, pp. 44	Difficult to relate findings of the study to an EU level ecotoxicology risk assessment as they are based on GSI and HIS values and the different types of oocyte found in the ovaries between exposure groups.
717	Ecotoxicology	Ayanda I. O. et al.	2018	Toxicity of sublethal concentrations of glyphosate and paraquat herbicide in the African catfish (<i>Clarias gariepinus</i>)	International Journal of Agriculture and Biology (2018), Vol. 20, No. 6, pp. 1359-1364	Observations based on enzyme levels are not used in EU level ecotoxicological risk assessment for Annex I renewal purposes.
718	Ecotoxicology	Babalola O. O. et al.	2019	Mortality, teratogenicity and growth inhibition of three glyphosate formulations using Frog Embryo Teratogenesis Assay-Xenopus.	Journal of applied toxicology (2019), Vol. 39, No. 9, pp. 1257-1266.	This paper uses a formulation that is not the representative formulation for the annex I renewal. Study endpoints cannot be related to the EU level risk assessment as the techniques used are not recognised at the EU level.
719	Ecotoxicology	Bach N. C. et al.	2018	Effects of glyphosate and its commercial formulation, Roundup (R) Ultramax, on liver histology of tadpoles of the neotropical frog, <i>Leptodactylus latrans</i> (amphibia: Anura).	Chemosphere (2018), Vol. 202, pp. 289-297	Study conducted using a formulation that is not the representative formulation for the Annex I renewal. Roundup Ultramax is based on MON 78294, which contains a different surfactant system compared to the representative formulation (MON 52276) and therefore the effects of the surfactant cannot be excluded.
720	Ecotoxicology	Baier F. et al.	2016	Non-target effects of a glyphosate-based herbicide on Common toad larvae (<i>Bufo bufo</i> , Amphibia) and associated algae are altered by temperature.	PeerJ (2016), Vol. 4, pp. e2641	Test item used is not the representative formulation relevant to the EU renewal of glyphosate. The article discusses the impact of temperature on toxicity. Studies conducted for EU renewal are standardly conducted at a constant temperature that reflects median temperature in the field. Variable temperature studies are not considered at EU level.
721	Ecotoxicology	Baier F. et al.	2016	Temperature-Dependence of Glyphosate-Based Herbicide's Effects on Egg and Tadpole Growth of Common Toads	Frontiers in Environmental Science (2016), Vol. 4, pp. 51	The study was conducted using Roundup, which contains POEA and the influence of POEA on the achieved results cannot be excluded. The representative formulation for the Annex I renewal does not contain POEA, therefore the findings are not relevant to the renewal risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
722	Ecotoxicology	Baker L. F. et al.	2014	The direct and indirect effects of a glyphosate-based herbicide and nutrients on Chironomidae (Diptera) emerging from small wetlands.	Environmental toxicology and chemistry (2014), Vol. 33, No. 9, pp. 2076-85	The formulation used in the article is not relevant to the Annex I renewal, as has a different surfactant system.
723	Ecotoxicology	Banaee M. et al.	2019	Acute exposure to chlorpyrifos and glyphosate induces changes in hemolymph biochemical parameters in the crayfish, <i>Astacus leptodactylus</i> (Eschscholtz, 1823).	Comparative biochemistry and physiology. Toxicology & pharmacology (2019), Vol. 222, pp. 145-155	Endpoints based on biochemical parameters are not relevant to an EU level ecotoxicological risk assessment for Annex I renewal.
724	Ecotoxicology	Bandara K. et al.	2015	Effect of glyphosate-based herbicide, Roundup super(TM) on territory defence of male <i>Oreochromis mossambicus</i> (Osteichthyes, Cichlidae) associated with mating behaviour	Sri Lanka journal of aquatic sciences (2015), Vol. 20, No. 1, pp. 1-10	Formulation tested contains POEA - not relevant to an EU level Annex I ecotoxicological risk assessment for renewal.
725	Ecotoxicology	Barbukho O. V. et al.	2011	Effect of herbicide Roundup on carp spawn viability and possibility for prevention of its toxicity by probiotic preparation BPS-44	Gidrobiologicheskii Zhurnal (2011), Vol. 47, No. 3, pp. 74-79	As Roundup was used in the study which contains surfactants not present in the representative formulation high concentrations were used, and eggs were exposed to both a probiotic and Roundup, this study is not relevant to the renewal of glyphosate.
726	Ecotoxicology	Bawa V. et al.	2018	Toxic effects of glyphosate on common carp (<i>Cyprinus carpio</i> L.) fingerlings.	Agricultural Research Journal (2018), Vol. 55, No. 1, pp. 169-171	The formulation used has a surfactant system that is based on POEA, which is not relevant to the EU representative formulation for the annex I renewal.
727	Ecotoxicology	Behrend J. E. et al.	2018	Contact with a glyphosate-based herbicide has long-term effects on the activity and foraging of an agrobiont wolf spider.	Chemosphere (2018), Vol. 194, pp. 714-721	Study used MON 8709 Buceanear Plus formulation which contains MON 0818 (based on POEA) and is not used in the representative EU formulation. Therefore findings cannot be related to the risk assessment.
728	Ecotoxicology	Berger G. et al.	2018	How does changing pesticide usage over time affect migrating amphibians: a case study on the use of glyphosate-based herbicides in German agriculture over 20 years.	Frontiers in Environmental Science (2018), Vol. 6, article 6	This paper considers information from multiple sources to assess the impact of herbicides on amphibian populations in Germany over the last 20 years. This is country specific information that cannot be related to an EU level ecotoxicological risk assessment for EU Annex I renewal.
729	Ecotoxicology	Bernal-Rey D. L. et al.	2020	Seasonal variations in the dose-response relationship of acetylcholinesterase activity in freshwater fish exposed to chlorpyrifos and glyphosate.	Ecotoxicology and environmental safety (2020), Vol. 187, pp. 109673	No specific endpoints that are useable in an EU level ecotoxicological risk assessment for Annex I renewal are presented in the paper. It is difficult to relate the observed effects to fish species found in the EU, as these data were collected from wild caught fish collected over a period of time. Impacts for example, of pH on the levels of stress in the system were not considered and may have ultimately contributed to the observed effects.
730	Ecotoxicology	Berthelemy N. J.	2018	Effects of Glyphosate and Roundup on the brine shrimp <i>Artemia franciscana</i>	Integrative and comparative biology (2018), Vol. 58, Supp. 1, pp. E277-E277	This paper is a poster abstract. There is no associated paper. There is insufficient information presented in the poster abstract to establish relevance of the poster to the Annex I renewal.
731	Ecotoxicology	Bhojane N. M. et al.	2018	Individual and combined effect of indoxacarb and glyphosate on biochemical alterations in Japanese quails (<i>Coturnix Coturnix Japonica</i>)	Chemical Science Review and Letters (2018), Vol. 7, No. 25, pp. 190-200	Cellular level parameters are discussed in this paper, with endpoints that are not relevant to an Annex I renewal from an ecotoxicological perspective.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
732	Ecotoxicology	Blasco P. M. P. et al.	2018	Comparative study of chronic toxicity of herbicides used in South America using a model of <i>Cyprinus carpio</i>	Environmental Science: An Indian Journal (2018), Vol. 14, No. 5, pp. 175	Formulation used is not the representative formulation for the Annex I renewal.
733	Ecotoxicology	Boily M. et al.	2013	Acetylcholinesterase in honey bees (<i>Apis mellifera</i>) exposed to neonicotinoids, atrazine and glyphosate: laboratory and field experiments.	Environmental science and pollution research international (2013), Vol. 20, No. 8, pp. 5603-14	The test item is the commercial formulation Weathermax 240 which is distributed in Canada. This formulation is not the representative formulation for the Annex I renewal in the EU. In addition, the study does not follow any approved guideline and the investigated effect on acetylcholinesterase cannot be related to the EU level bee ecotoxicological risk assessment for Annex I renewal purposes. The field experiment, conducted in two regions in Québec (Canada) was not conducted under controlled conditions. No analytical verification of glyphosate was provided. Also, the experimental design is only briefly described, with no rationale presented for the selection of exposure concentrations.
734	Ecotoxicology	Bokony V. et al.	2017	Chronic exposure to a glyphosate-based herbicide makes toad larvae more toxic.	Proceedings. Biological sciences (2017), Vol. 284, No. 1858	The article does not report results which can be used for a risk assessment and information is insufficient to transfer values into such determinants.
735	Ecotoxicology	Bonfanti P. et al.	2018	A glyphosate micro-emulsion formulation displays teratogenicity in <i>Xenopus laevis</i> .	Aquatic toxicology (2018), Vol. 195, pp. 103-113	Formulation is not relevant to the EU level renewal of glyphosate.
736	Ecotoxicology	Bonnineau C. et al.	2012	Light history modulates antioxidant and photosynthetic responses of biofilms to both natural (light) and chemical (herbicides) stressors.	Ecotoxicology (2012), Vol. 21, No. 4, pp. 1208-24	Endpoints / findings not relatable to an EU level ecotoxicological risk assessment for Annex I renewal.
737	Ecotoxicology	Boscardin J. et al.	2016	Effects of different types of weed control on the ant fauna in <i>Eucalyptus grandis</i> . Original Title: Efeitos de diferentes tipos de controle de plantas infestantes sobre a mirmecofauna em <i>Eucalyptus grandis</i> .	Ciencia Florestal (2016), Vol. 26, No. 1, pp. 21-34	Specific endpoints that could be used in an EU level risk assessment were not presented.
738	Ecotoxicology	Boscardin J. et al.	2014	Relationship between ant communities and environmental quality in <i>Eucalyptus grandis</i> submitted to different weedy species control in the south of Brazil. Original Title: Relacao entre guildas de formigas e a qualidade ambiental em <i>Eucalyptus grandis</i> subme	ENTOMOTROPICA (2014), Vol. 29, No. 3, pp. 173-182	Presented data is not relatable to an EU level risk assessment for EU Annex I level renewal.
739	Ecotoxicology	Boufleuer E. M. S. et al.	2016	Assessment of mortality and reproduction of <i>Daphnia magna</i> subjected to the herbicide glyphosate. Avaliacao da mortalidade e reproducao de <i>Daphnia magna</i> submetida ao herbicida glifosato.	Acta Iguazu (2016), Vol. 5, No. 5, pp. 25-33	Results of a 48 hour <i>Daphnia magna</i> tests treated with glyphosate determined an LC50 of 2.1087 mg/L. A chronic (21 day) study determined effects at 2.1087 mg/L, but no effects were observed at the lower concentrations tested. The study was not conducted to GLP or to an acceptable guideline and there are several short comings in the provided report. The test substance used (Polaris 48%) is a Monsanto Brazil product that is based on

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
740	Ecotoxicology	Boutin C. et al.	2010	Measuring variability in phytotoxicity testing using crop and wild plant species.	Environmental toxicology and chemistry (2010), Vol. 29, No. 2, pp. 327-37	the IPA salt of glyphosate. This product also contains a surfactant that is not relevant to the representative formulation, therefore the observed findings are not considered relevant to the renewal. Furthermore the influence of the co-formulant on the results cannot be excluded. There are no analytical data reported and so the exposure cannot be confirmed.
741	Ecotoxicology	Boutin C. et al.	2019	Effects of sub-lethal doses of herbicides on the competitive interactions between two non-target plants: <i>Centaurea cyanus</i> L. and <i>Silene noctiflora</i> L.	Environmental toxicology and chemistry (2019), Vol. 8, No. 9, pp. 2053-2064	Glyphosate product + surfactant (Agrisul 90) was used in the study which compared this with an atrazine product to look at the phytotoxicity to plant species. Treatments ranged from 21 to 2277 g ai/ha for glyphosate product, applied in a greenhouse. Although an IC25 could be obtained from the article, the results indicate great variability between the plant species tested and external factors. Therefore, it is not possible to extrapolate from this data for use in the regulatory risk assessment in the glyphosate renewal.
742	Ecotoxicology	Boutin C. et al.	2014	Herbicide impact on non-target plant reproduction: What are the toxicological and ecological implications?	ENVIRONMENTAL POLLUTION (2014), Vol. 185, pp. 295-306	Observation not linked to glyphosate or its metabolites. In this case the observations were concerning competition in the growth of plants under different pesticide stress regimes and at different planting densities. Endpoints considered relevant for EU level risk assessment were not presented.
743	Ecotoxicology	Bridi D. et al.	2017	Glyphosate and Roundup(®) alter morphology and behavior in zebrafish.	Toxicology (2017), Vol. 392, pp. 32-39	This paper describes the results of a set of long term monitoring studies that were used to investigate the impact of a range of herbicides on the reproductive output of plants. Whilst these data are interesting in developing the testing paradigm for plants, the data presented cannot be related to an EU level risk assessment for Annex I renewal.
744	Ecotoxicology	Bruckner A. et al.	2019	Foliar Roundup application has minor effects on the compositional and functional diversity of soil microorganisms in a short-term greenhouse experiment.	Ecotoxicology and environmental safety (2019), Vol. 174, pp. 506-513	The article does not report results, which can be used for risk assessment and information is insufficient to transfer values into such determinants.
745	Ecotoxicology	Buch A. C. et al.	2013	Toxicity of three pesticides commonly used in Brazil to <i>Pontosclex corethrurus</i> (Mueller, 1857) and <i>Eisenia andrei</i> (Bouché, 1972)	Applied soil ecology (2013), Vol. 69, pp. 32-38	Formulation used is not the representative formulation for the Annex I renewal.
746	Ecotoxicology	Buck J. C. et al.	2015	Effects of pesticide mixtures on host-pathogen dynamics of the amphibian chytrid fungus	PLoS One (2015), Vol. 10, No. 7, pp. e0132832/1	The formulation used is not the representative formulation for the Annex I.
747	Ecotoxicology	Burella P. M. et al.	2018	Oxidative damage and antioxidant defense in <i>Caiman latirostris</i> (Broad-snouted caiman) exposed in ovo to pesticide formulations.	Ecotoxicology and environmental safety (2018), Vol. 161, pp. 437-443	Effects on host pathogen dynamics is not a data requirement for the Annex I submission. Therefore, the findings cannot be related to the ecotoxicological risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
748	Ecotoxicology	Canosa I. S. et al.	2018	Ovarian growth impairment after chronic exposure to Roundup Ultramax® in the estuarine crab <i>Neohelice granulata</i> .	Environmental science and pollution research international (2018), Vol. 25, No. 2, pp. 1568-1575	Roundup Ultramax is the formulation used which contains 600 g/L a.c. This is however, not the representative formulation for the renewal.
749	Ecotoxicology	Canosa I. S. et al.	2019	Imbalances in the male reproductive function of the estuarine crab <i>Neohelice granulata</i> , caused by glyphosate.	Ecotoxicology and environmental safety (2019), Vol. 182, pp. 109405	The test substance is a 400 g a.i./L formulation that is not the representative formulation for the Annex I renewal.
750	Ecotoxicology	Carmo E. L. et al.	2010	Pesticide selectivity for the insect egg parasitoid <i>Telenomus remus</i>	BioControl (2010), Vol. 55, No. 4, pp. 455-464	An IOBC guideline criteria was used for classification of three different glyphosate products used as test substances alongside several other insecticides and herbicides in this comparison lab study. Endpoints generated are not relevant to the renewal of glyphosate.
751	Ecotoxicology	Carpenter J. K. et al.	2016	The effect of two glyphosate formulations on a small, diurnal lizard (<i>Oligosoma polychroma</i>).	Ecotoxicology (2016), Vol. 25, No. 3, pp. 548-54	Contains POEA surfactant, therefore is not relevant to EU renewal.
752	Ecotoxicology	Carranza C. S. et al.	2014	Influence of the pesticides glyphosate, chlorpyrifos and atrazine on growth parameters of nonochratoxigenic <i>Aspergillus</i> section <i>Nigri</i> strains isolated from agricultural soils.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2014), Vol. 49, No. 10, pp. 747-55	Comparative growth rates of <i>Aspergillus niger</i> following application of different pesticides. Endpoints are not relevant to an EU level Annex I ecotoxicological risk assessment.
753	Ecotoxicology	Castilho A. F. et al.	2016	The impact of glyphosate herbicides on soil microbial activity from the Carajas National Forest.	Revista de Ciencias Agrarias / Amazonian Journal of Agricultural and Environmental Sciences (2016), Vol. 59, No. 3, pp. 302-309	A long term monitoring study using multiple Roundup formulations was performed. Roundup original contains POEA as a surfactant and is not therefore relevant. The other Roundup formulations differ in their composition to the representative formulation for the Annex I renewal.
754	Ecotoxicology	Chen L. et al.	2012	The combined effects of UV-B radiation and herbicides on photosynthesis, antioxidant enzymes and DNA damage in two bloom-forming cyanobacteria.	Ecotoxicology and environmental safety (2012), Vol. 80, pp. 224-30	Paper discusses the effect of glyphosate at different UV-B levels. Direct effects are not discussed. Not relevant to EU level risk assessment.
755	Ecotoxicology	Choi C. J. et al.	2012	Rapid effects of diverse toxic water pollutants on chlorophyll a fluorescence: variable responses among freshwater microalgae.	Water research (2012), Vol. 46, No. 8, pp. 2615-26	This article looks at effects of glyphosate + other compounds on the PSII system, determining effects to Chlorophyll A levels using fluorescence. Endpoints were generated using a novel approach that is not considered relevant to an EU level ecotoxicological risk assessment.
756	Ecotoxicology	Zanuncio C. J. et al.	2018	Glyphosate-based herbicides toxicity on life history parameters of zoophytophagous <i>Podisus nigrispinus</i> (Heteroptera: Pentatomidae)	Ecotoxicology and environmental safety (2018), Vol. 147, pp. 245-250	Based on an exposure situation where soldier bugs are exposed on glyphosate resistant crops, which are not relevant to the EU exposure situation.
757	Ecotoxicology	Condrosari P. et al.	2018	Growth inhibition test of glyphosate herbicide for glyphosate-degrading bacteria screening	International Journal of ChemTech Research (2018), Vol. 11, No. 5, pp. 240-248	The paper describes a screening test for establishing bacterial populations as tools for remediation of soils. The presented endpoints are not relevant to an EU level risk assessment from an ecotoxicological perspective.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
758	Ecotoxicology	Costa R. N. et al.	2016	Measuring the impacts of Roundup Original® on fluctuating asymmetry and mortality in a Neotropical tadpole	Hydrobiologia (2016), Vol. 765, No. 1, pp. 85-96	Formulation tested contains POEA which is not relevant in the EU, as the representative formulation does not contain POEA.
759	Ecotoxicology	Cuhra M. et al.	2013	Clone- and age-dependent toxicity of a glyphosate commercial formulation and its active ingredient in <i>Daphnia magna</i> .	Ecotoxicology (2013), Vol. 22, No. 2, pp. 251-62	Study was performed according to methods adapted from the ISO, US EPA and the OECD Testing. Juveniles > 24 hour old are not the approach advised in any of the test guidelines, so the acute results for the aged cohort studies cannot be related to an EU level risk assessment. Concerning the chronic exposure assay, this approach was modified from the guidelines stated above, extending beyond the 21 day duration of the guideline test. Validity criteria for the acute and chronic test were not stated. Details of the methods used to prepare the test media are not reported. Biological data are not reported for all age groups, so the data presented in the plots cannot be confirmed. The test organisms used in the tests were from different natural sources and poorly characterised as it would be needed to draw a regulatory relevant conclusion from the reported results. Furthermore and more critically, analytical dose confirmation of media in the vessels was not performed, so exposure cannot be confirmed. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
760	Ecotoxicology	Currie Z. et al.	2015	Toxicity of Cuspidate 480SL® spray mixture formulation of glyphosate to aquatic organisms.	Environmental toxicology and chemistry (2015), Vol. 34, No. 5, pp. 1178-84	The main focus of the article was a hazard assessment of two glyphosate formulations not available in Europe and the associated co-formulants. The study, measured toxicity values and calculated exposure values for South America. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
761	Ecotoxicology	da Costa Chaullet F. et al.	2019	Glyphosate- and Fipronil-Based Agrochemicals and Their Mixtures Change Zebrafish Behavior.	Archives of environmental contamination and toxicology (2019), Vol. 77, No. 3, pp. 443-451	This paper describes behavioural differences in zebra fish when exposed to either glyphosate or fipronil. No endpoint data presented could be used in an EU level for Annex I ecotoxicological risk assessment. Aversion / avoidance testing is not an EU level ecotoxicology risk assessment data requirement.
762	Ecotoxicology	da Rosa J. G. S. et al.	2016	Fish Aversion and Attraction to Selected Agrochemicals.	Archives of environmental contamination and toxicology (2016), Vol. 71, No. 3, pp. 415-22	Paper describes a novel fish avoidance study which is not considered relevant to an EU level risk assessment.
763	Ecotoxicology	da Silva G. S. et al.	2019	Gene expression, genotoxicity, and physiological responses in an Amazonian fish, <i>Colossoma macropomum</i> (CUVIER 1818), exposed to Roundup and subsequent acute hypoxia	Comparative Biochemistry and Physiology, Part C: Toxicology & Pharmacology (2019), Vol. 222, pp. 49-58	The formulation used is based on MON 2139, which contains POEA. POEA surfactants are not present in the representative formulation (MON 52276) being used for the Annex I renewal.
764	Ecotoxicology	da Silva R. A. et al.	2013	Compatibility of conventional agrochemicals used in rice crops with the entomopathogenic fungus <i>Metarhizium anisopliae</i> .	Scientia Agricola (2013), Vol. 70, No. 3, pp. 152-160	This paper presents the results of an agrochemical mixture study to entomopathogenic fungus. As the study was performed using a mixture the appropriate endpoints for glyphosate cannot be determined.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
765	Ecotoxicology	Dalton R. L. et al.	2010	Comparison of the effects of glyphosate and atrazine herbicides on nontarget plants grown singly and in microcosms.	Environmental toxicology and chemistry (2010), Vol. 29, No. 10, pp. 2304-15	A study to look at the effects of Glyphosate (Roundup original + surfactant, 356 g/L) on single potted plant species compared with a microcosm. Based on relevant guidelines, six doses of up to 2136 g ai/ha label rate. IC25 results generated were used to compare test systems, however it is not possible to extrapolate to the risk assessments in the glyphosate renewal. Additionally, due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
766	Ecotoxicology	de Brito Rodrigues L. et al.	2017	Ecotoxicological assessment of glyphosate-based herbicides: Effects on different organisms.	Environmental toxicology and chemistry (2017), Vol. 36, No. 7, pp. 1755-1763	The aim of the work presented in this paper was to evaluate the toxicity and potential effects of two glyphosate formulations on seed germination, brine shrimp and zebra fish larvae. The selected test species and design are not relevant to an EU level ecotoxicological risk assessment, as a USEPA approach was followed for a mixed consideration of diverse test species. The report provides insufficient description of study design and no specific rationale was cited for the formulations selected. Some methodology was performed according to OECD guidelines, however validity criteria were not evaluated and no analytical verification was performed.
767	Ecotoxicology	de Moraes C. P. et al.	2019	Hometic effect of glyphosate on Urochloa decumbens plants.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2019), Vol. 55, No. 4, pp. 376-381	This paper presents a summary and review of hometic growth response papers. No supportive data was presented to support stated endpoints.
768	Ecotoxicology	de Saraiva A. S. et al.	2016	Glyphosate sub-lethal toxicity to non-target organisms occurring in Jatropha curcas plantations in Brazil.	Experimental & applied acarology (2016), Vol. 70, No. 2, pp. 179-87	Endpoints not relevant to an EU level ecotoxicological risk assessment.
769	Ecotoxicology	de Sousa Saraiva A. et al.	2015	Weed management practices affect the diversity and relative abundance of phytic nut mites.	Experimental & applied acarology (2015), Vol. 65, No. 3, pp. 359-75	The paper describes a long term monitoring programme looking at weed management practices and their impact on mite species in a particular region of Brazil, that cannot be related to an EU level risk assessment.
770	Ecotoxicology	De Souza Filho J. et al.	2013	Mutagenicity and genotoxicity in gill erythrocyte cells of Poecilia reticulata exposed to a glyphosate formulation.	Bulletin of environmental contamination and toxicology (2013), Vol. 91, No. 5, pp. 583-7	Methods and endpoints are not relevant to an EU level ecotoxicology assessment.
771	Ecotoxicology	De Stefano L. G. et al.	2018	Comparative impact of two glyphosate-based formulations in interaction with Limnoperna fortunei on freshwater phytoplankton	Ecological indicators (2018), Vol. 85, pp. 575-584	This paper looks at the interaction of herbicide formulations in conjunction with the presence of mussels on the development of periphyton and phytoplankton communities. As the effects cannot be related directly to the single active substance, this paper is not considered relevant for the EU level Ecotoxicological risk assessment for Annex I renewal.
772	Ecotoxicology	Debski H. et al.	2018	Effects of glyphosate and fluzifop-P-butyl on flavonoids content and growth of common buckwheat (Fagopyrum esculentum Moench)	Fresenius Environmental Bulletin (2018), Vol. 27, No. 1, pp. 91-97	Cellular level parameters discussed in the paper, with endpoints that are not relevant to an Annex I renewal from an ecotoxicological perspective.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
773	Ecotoxicology	Debski H. et al.	2018	Comparison of the response of seedlings of common buckwheat (<i>Fagopyrum esculentum</i> Moench) to glyphosate applied to the shoot or to the root zone.	Acta Agrobotanica (2018), Vol. 71, No. 1, pp. Article No.: 1730	Unable to establish the exposure rates used in the three different tests. mMolar solutions were prepared, but no attempt has been made to confirm dosing and no analysis performed. Endpoints are therefore not relevant to an EU level risk assessment from an ecotoxicological perspective.
774	Ecotoxicology	Di Fiori E. et al.	2012	Impact of the invasive mussel <i>Limnoperna fortunei</i> on glyphosate concentration in water.	Ecotoxicology and environmental safety (2012), Vol. 81, pp. 106-13	Paper describes the use of golden mussels for removal of glyphosate from the water column. Endpoints presented cannot be used in EU level Annex I renewal risk assessment.
775	Ecotoxicology	Dinehart S. K. et al.	2010	Acute and chronic toxicity of Roundup Weathermax and Ignite 280 SL to larval <i>Spea multiplicata</i> and <i>S. bombifrons</i> from the Southern High Plains, USA.	Environmental pollution (2010), Vol. 158, No. 8, pp. 2610-7	Roundup Weathermax was used as a test item. The composition differs to that of the representative formulation for the Annex I renewal (MON 52276), and thus the results cannot be applied to the risk assessment for the EU renewal. Due to the test material not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
776	Ecotoxicology	do Carmo E. L. et al.	2010	SELECTIVITY OF PESTICIDES USED IN SOYBEAN CROPS TO TRICHOGRAMMA PRETIOSUM RILEY, 1879 (HYMENOPTERA: TRICHOGRAMMATIDAE) PUPAE. Original Title: SELETIVIDADE DE PRODUTOS FITOSSANITARIOS UTILIZADOS NA CULTURA DA SOJA PARA PUPAS DE TRICHOGRAMMA PRETIOSUM RILEY	Arquivos do Instituto Biológico Sao Paulo (2010), Vol. 77, No. 2, pp. 282-290	Effects on parasitoid wasps via exposure of parasitised eggs which were immersed for 5 sec in test solutions. However, this is no adequate route of exposure and the content of active ingredient per area is unclear. Therefore the biological results cannot be attributed to a specific test concentration.
777	Ecotoxicology	Dos Santos A. P. R. et al.	2017	A glyphosate-based herbicide induces histomorphological and protein expression changes in the liver of the female guppy <i>Poecilia reticulata</i> .	Chemosphere (2017), Vol. 168, pp. 933-943	The paper attempts to establish a proteomic method for detecting sub-lethal impacts of chemicals on fish. This is not relevant for risk assessment in the EU, where growth and reproductive parameters achieved in higher tier fish testing are considered. The formulation used is also not the representative formulation for the annex I renewal.
778	Ecotoxicology	Dos Santos Teixeira J. M. et al.	2018	Acute toxicity and effects of Roundup Original® on pintado da Amazonia.	Environmental science and pollution research international (2018), Vol. 25, No. 25, pp. 25383-25389	Endpoints presented were for a formulation that is not the representative formulation for the Annex I renewal.
779	Ecotoxicology	Druart C. et al.	2012	Landsnail eggs bioassays: A new tool to assess embryotoxicity of contaminants in the solid, liquid or gaseous phase of soil	Applied soil ecology (2012), Vol. 53, pp. 56-64	Endpoints are not applicable to EU level ecotoxicology risk assessment. Approach described is novel and not validated.
780	Ecotoxicology	Druille M. et al.	2015	Glyphosate vulnerability explains changes in root-symbionts propagules viability in pampean grasslands	Agriculture, ecosystems & environment (2015), Vol. 202, pp. 48-55	Findings cannot be related to an EU level ecotoxicological risk assessment.
781	Ecotoxicology	Druille M. et al.	2013	Arbuscular mycorrhizal fungi are directly and indirectly affected by glyphosate application	Applied soil ecology (2013), Vol. 72, pp. 143-149	Describes an experiment to establish if fungal hyphae associated with plant roots are affected by glyphosate. Endpoints achieved not relevant to EU level risk assessment. Exposure rates cannot be determined from the paper.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
782	Ecotoxicology	Du X. et al.	2012	Effects of eight herbicides on seed germination and seedling growth of <i>Scutellaria baicalensis</i> Georg	Xibei Nongye Xuebao (2012), Vol. 21, No. 4, pp. 202-206	The formulation (Glyphosate (Baron®) 48% SL (Elhelb), is not the representative formulation for the EU Annex I renewal. The study was not conducted to GLP and/or according to a recognized test guideline and there are no validity criteria presented. The authors state that Roundup had no effect on the germination of <i>Scutellaria baicalensis</i> Georgi seeds in laboratory petri dish test but inhibited the growth of <i>Scutellaria baicalensis</i> Georgi seedlings. However, given the lack of standard guidelines and important material and application methods, in conjunction with insufficiently reported test conditions and biological data, no useful endpoint for the risk assessment can be derived.
783	Ecotoxicology	Dumitru G. et al.	2019	Effect of glyphosate herbicide on some hematological and biochemical parameters in <i>Carassius auratus</i> L	Revista de Chimie (2019), Vol. 70, No. 2, pp. 518-521	Sub-lethal effects on blood chemistry parameters are not relevant to an ecotoxicological risk assessment for the EU level renewal of glyphosate. On review of the report, the formulation was also a 48% a.e. content, with reasons for the observed effects related to POEA in the formulation described in the results. The representative formulation does not contain POEA, therefore results not relevant for the EU.
784	Ecotoxicology	Edge C. B. et al.	2013	Laboratory and field exposure of two species of juvenile amphibians to a glyphosate-based herbicide and <i>Batrachochytrium dendrobatidis</i> .	The Science of the total environment (2013), Vol. 444, pp. 145-52	Formulation used is not the representative formulation for the Annex I renewal. Effects from co-formulants cannot be excluded.
785	Ecotoxicology	Edge C. B. et al.	2012	A silviculture application of the glyphosate-based herbicide VisionMAX to wetlands has limited direct effects on amphibian larvae.	Environmental toxicology and chemistry (2012), Vol. 31, No. 10, pp. 2375-83	The formulation used is not the representative formulation for the Annex I renewal. Effects from co-formulants cannot be excluded.
786	Ecotoxicology	Edge C. et al.	2014	Variation in amphibian response to two formulations of glyphosate-based herbicides.	Environmental toxicology and chemistry (2014), Vol. 33, No. 11, pp. 2628-32	Roundup WeatherMax and Roundup Weed and Grass Control, which are non EU representative glyphosate formulated products were used as the test substances. Prior exposure history to other chemicals and other organisms within their natural environment was unknown. Several limitations were observed within the study including lack of exposure history of the local organisms, inability to attribute the results entirely to the test substance, inability to develop a dose-response relationship or derive endpoints within the study, the analytical approach and verification was lacking, and the study was not conducted according to a standard guideline.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
787	Ecotoxicology	Edge C. et al.	2014	The response of amphibian larvae to exposure to a glyphosate-based herbicide (Roundup WeatherMax) and nutrient enrichment in an ecosystem experiment.	Ecotoxicology and environmental safety (2014), Vol. 109, pp. 124-32	WeatherMax, a non EU representative glyphosate formulated product was used as the test substance. Prior exposure history of the egg masses to other chemicals as well as other organisms within the wetlands was unknown as the study was conducted in a natural environment. Several limitations were observed within the study including lack of exposure history of the local organisms, inability to attribute the results entirely to the test substance, inability to develop a dose-response relationship within the study. Testing conditions were neither documented nor controlled, and representativeness of the test conditions were unknown as the study was not conducted according to a standard guideline.
788	Ecotoxicology	El Sebai O. A. et al.	2012	Side-effect of certain herbicides on egg parasitoid <i>Trichogramma evanescens</i> (West.) (Hymenoptera: Trichogrammatidae)	Academic Journal of Entomology (2012), Vol. 5, No. 1, pp. 1-10	The aim of the study was to compare the toxicity of four different commercially available herbicidal products to <i>T. evanescens</i> wasps. The study was not conducted to a guideline or to GLP and the study design lacks some details compared with relevant guidelines. The test concentrations are based on nominal and no analytical verifications of test item concentrations were conducted. Only some details of the statistical analysis are reported. As the study is based on a glyphosate product, the toxicity of glyphosate active substance alone is unknown and therefore endpoints generated from this study are not quantifiable. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
789	Ecotoxicology	Enemaduku A. M. et al.	2015	Effects of pesticides on the micro-flora of loamy soil obtained from Biological Garden, Federal University of Technology, Minna, Nigeria	Journal of Scientific and Engineering Research (2015), Vol. 2, No. 4, pp. 55-63	This monitoring study based on a Nigerian soil type, uses endpoints that are not applicable to an EU level ecotoxicological risk assessment.
790	Ecotoxicology	Erban T. et al.	2017	Detection of the desiccant and plant growth regulator chlormequat in honeybees and comb pollen.	Veterinari Medicina (2017), Vol. 62, No. 11, pp. 596-603	Investigation of samples from hives exhibiting poisoning. Analyzed many pesticides (including glyphosate). No glyphosate detections reported.
791	Ecotoxicology	Faghani M.	2018	Effect of glyphosate on honey bee (<i>Apis Mellifera</i>) performance	Arthropods (2018), Vol. 7, No. 3, pp. 77-81	Presents no data that can be used in an EU based risk assessment.
792	Ecotoxicology	Fai P. B. A. et al.	2015	Potential of the microbial assay for risk assessment (MARA) for assessing ecotoxicological effects of herbicides to non-target organisms.	Ecotoxicology (2015), Vol. 24, No. 9, pp. 1915-22	Novel test design / approach - not reliable to an EU level ecotoxicological risk assessment for Annex I renewal.
793	Ecotoxicology	Faita M. R. et al.	2018	Changes in hypopharyngeal glands of nurse bees (<i>Apis mellifera</i>) induced by pollen-containing sublethal doses of the herbicide Roundup	Chemosphere (2018), Vol. 211, pp. 566-572	This test was conducted using Roundup Original which contains POEA and is not therefore relevant to the EU level risk assessment for ANNEX I renewal.
794	Ecotoxicology	Falis M. et al.	2014	Effects of heavy metals and pesticides on survival of <i>Artemia franciscana</i> .	Acta Veterinaria Bmo (2014), Vol. 83, No. 2, pp. 95-99	This paper presents data for a formulation that cannot be related to an EU level risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
795	Ecotoxicology	Fan J. et al.	2013	Hydroxyl radical generation and oxidative stress in <i>Carassius auratus</i> exposed to glyphosate and its formulation	Toxicological and environmental chemistry (2013), Vol. 95, No. 7, pp. 1183-1191	Contains POEA, therefore not relevant to EU renewal.
796	Ecotoxicology	Fan J. Y. et al.	2013	Herbicide Roundup® and its main constituents cause oxidative stress and inhibit acetylcholinesterase in liver of <i>Carassius auratus</i>	Journal of environmental science and health, Part B. Pesticides, food contaminants and agricultural wastes (2013), Vol. 48, No. 10, pp. 844-850	Contains POEA, therefore not relevant to EU renewal.
797	Ecotoxicology	Farabaugh N. F. et al.	2014	Behavioral responses of the Strawberry Poison Frog (<i>Oophaga pumilio</i>) to herbicide olfactory cues: possible implications for habitat selection and movement in altered landscapes.	Canadian Journal of Zoology (2014), Vol. 92, No. 11, pp. 979-984	Endpoints based on avoidance behaviour are not used in the ecotoxicological risk assessment for the Annex I renewal purposes.
798	Ecotoxicology	Farina W. M. et al.	2019	Effects of the Herbicide Glyphosate on Honey Bee Sensory and Cognitive Abilities: Individual Impairments with Implications for the Hive.	Insects (2019), Vol. 10, No. 10, pp. E354	This is a review article. No data presented that is supported.
799	Ecotoxicology	Fedorova N. V. et al.	2019	Influence of glyphosate on the morphogenesis and biochemical indicators of onions and wheat.	Zashchita i Karantin Rastenii (2019), No. 9, pp. 47-48	Article concerns the effect of herbicide use on the nutrient content of wheat and onions. The endpoints / observations are not relevant to an EU level ecotoxicological risk assessment for Annex I renewal.
800	Ecotoxicology	Felix F. J. et al.	2015	Impact of the herbicide glyphosate roundup (41%) on the haematology of the freshwater fish, Catla catla (Hamilton)	IOSR Journal of Environmental Science, Toxicology and Food Technology (2015), Vol. 9, No. 4-3, pp. 56-60	Contains POEA, therefore not relevant to EU renewal.
801	Ecotoxicology	Felix F. J. et al.	2018	Efficacy of herbicide glyphosate Hijack on the blood parameters of the freshwater fish, Catla catla (HAM)	Asian Journal of Biology (2018), Vol. 7, No. 2, pp. 38848	Biological impacts on enzyme levels in blood are not used in an EU level ecotoxicological risk assessment.
802	Ecotoxicology	Felline S. et al.	2019	The response of the algae <i>Fucus vesiculosus</i> (Fuciales, Ochrophyta) to Roundup® solution exposure: A metabolomics approach.	Environmental pollution (2019), Vol. 254, No. Pt A, pp. 112977	Novel approach utilising metabolomics. The latter is not used in EU level risk assessment for Annex I renewal and is thus not relevant to the risk assessment.
803	Ecotoxicology	Ferreira E. A. et al.	2015	Cassava physiological responses to the application of herbicides. Respostas fisiologicas da mandioca a aplicacao de herbicidas.	Semina: Ciencias Agrarias (2015), Vol. 36, No. 2, pp. 645-655	Endpoints not relevant to an EU level ecotoxicological risk assessment for Annex I renewal.
804	Ecotoxicology	Ferreira-Junior D. F. et al.	2017	Low Concentrations of Glyphosate-Based Herbicide Affects the Development of <i>Chironomus xanthus</i>	Water, air, and soil pollution (2017), Vol. 228, No. 10, 390 p	The purpose of the study was to test acute and chronic toxicity of Roundup® Original to a tropical fresh water midge. Roundup Original contains POEA surfactant which is not permitted for use in formulations in the EU. The representative formulation (MON 5276) does not contain POEA. The influence of the surfactant on the achieved results in this study cannot be excluded. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
805	Ecotoxicology	Figueiredo J. et al.	2014	Effects of four types of pesticides on survival, time and size to metamorphosis of two species of tadpoles (<i>Rhinella marina</i> and <i>Physalaemus centralis</i>) from the southern Amazon, Brazil.	Herpetological Journal (2014), Vol. 24, No. 1, pp. 7-15	The aim of the work presented in the paper was to evaluate the effects of four commonly applied herbicides on the survival and development on amphibians in Brazil. It was stated by the authors that standard fish surrogate endpoint data may not be directly applicable to Brazil's amphibian species. Thus the local species selected, and testing approach used are not directly relatable to an EU level ecotoxicological risk assessment for Annex I renewal purposes. Furthermore, the acute and chronic toxicity tests were not conducted according to any recognised test guideline with neither specific validity criteria nor animal welfare considered. The frog eggs were collected from temporary ponds in Southern Amazonia, where previous exposure of the eggs to other chemicals in the environment is unclear. The eggs were hatched in rainwater, without measured water quality characteristics. The test item selected for glyphosate was a local glyphosate formulation (480 g/L). The effect of glyphosate on metamorphosis was inconclusive. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
806	Ecotoxicology	de Souza Filho J. et al.	2013	Toxicological effects of a glyphosate-based formulation on the liver of <i>Poecilia reticulata</i>	Current Topics In Toxicology (2013), Vol. 9, pp. 81-91	The study was performed to assess the acute mortality (based on OECD 203) and sub-lethal effects (including histopathology). The study lacks several experimental standard procedures (e.g. analytical verification, reporting of validity criteria). Furthermore the formulation (Roundup Transorb) is not the representative formulation for the EU Annex I renewal (MON 5276) that contains POEA, a co-formulant that is not permitted in formulations in the EU. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
807	Ecotoxicology	Filippov A. A. et al.	2019	Effect of Roundup Herbicide on the Temperature Characteristics of Maltase of the Intestinal Mucosa in Juvenile Fish	INLAND WATER BIOLOGY (2019), Vol. 12, No. 2, pp. 248-253	Enzymatic impacts resulting from exposure are not considered in the EU level ecotoxicological risk assessment for Annex I renewal. It is extremely difficult to relate the findings to an EU level exposure scenario.
808	Ecotoxicology	Fiorino E. et al.	2018	Effects of glyphosate on early life stages: comparison between <i>Cyprinus carpio</i> and <i>Danio rerio</i> .	Environmental science and pollution research international (2018), Vol. 25, No. 9, pp. 8542-8549	This paper is a poster abstract with no associated paper. There is insufficient information presented in the poster abstract to establish relevance of the poster to the Annex I renewal.
809	Ecotoxicology	Frontera J. L. et al.	2014	Effects of glyphosate and polyoxyethylene amine on metabolic rate and energy reserves of <i>Procamburus clarkii</i> juveniles.	Open Environmental Sciences (2014), Vol. 8, pp. 49-53	Contains POEA, therefore not relevant to EU renewal.

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810	Ecotoxicology	Fuentes L. et al.	2011	Comparative toxicity of two glyphosate formulations (original formulation of Roundup® and Roundup WeatherMAX®) to six North American larval anurans.	Environmental toxicology and chemistry (2011), Vol. 30, No. 12, pp. 2756-61	The original formulation of Roundup and Roundup WeatherMAX are not the representative formulation for the Annex I renewal. The original formulation of Roundup used, contains a POEA surfactant, which is not permitted for use in the EU. The test design is well described in the paper, but due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
811	Ecotoxicology	Gagneten A. M. et al.	2014	EFFECTOS DEL HERBICIDA RONDO® SOBRE Cerodaphnia reticulata (CRUSTACEA, CLADOCERA) Y DEGRADABILIDAD DEL GLIFOSATO (N-FOSFOMETILGLICINA) EN CONDICIONES EXPERIMENTALES	Natura Neotropicalis (2014), Vol. 45, No. 1&2, pp. 71-85	Formulation is not the representative formulation for the Annex I EU renewal.
812	Ecotoxicology	Gahl M. K. et al.	2011	Effects of chytrid fungus and a glyphosate-based herbicide on survival and growth of wood frogs (Lithobates sylvaticus).	Ecological applications (2011), Vol. 21, No. 7, pp. 2521-9	Toxicity of glyphosate products to wild wood frogs and chytrid fungus are assessed. The study was conducted in Canada. Endpoints do not lend themselves to the EU renewal of glyphosate.
813	Ecotoxicology	Galín R. R. et al.	2019	Effect of Herbicide Glyphosate on Drosophila melanogaster Fertility and Lifespan.	Bulletin of experimental biology and medicine (2019), Vol. 167, No. 5, pp. 663-666	The formulation used (GLYPHOS) contains POEA which is not relevant to the EU level ecotoxicological risk assessment for Annex I renewal, as the representative formulation does not contain POEA, which is a known surfactant this is known to be more toxic than glyphosate.
814	Ecotoxicology	Garcia-Espineira M. et al.	2018	Toxicity of atrazine- and glyphosate-based formulations on Caenorhabditis elegans.	Ecotoxicology and environmental safety (2018), Vol. 156, pp. 216-222	The formulated product used in the test contains MON 2139 which contains POEA (MON0818). Therefore findings are not relevant to the EU level and representative formulation for the Annex I renewal.
815	Ecotoxicology	Garcia-Perez J. A. et al.	2016	Impact of litter contaminated with glyphosate-based herbicide on the performance of Pontosclex corethrurus, soil phosphatase activities and soil pH	Applied soil ecology (2016), Vol. 104, pp. 31-41	Relates to a long term monitoring study on earthworms specific to South America.
816	Ecotoxicology	Garza-Leon C. V. et al.	2017	Toxicity evaluation of cypermethrin, glyphosate, and malathion, on two indigenous zooplanktonic species.	Environmental science and pollution research international (2017), Vol. 24, No. 22, pp. 18123-18134	The tested formulation is not the representative formulation for the Annex I renewal.
817	Ecotoxicology	Gaupp-Berghausen M. et al.	2015	Glyphosate-based herbicides reduce the activity and reproduction of earthworms and lead to increased soil nutrient concentrations.	Scientific reports (2015), Vol. 5, pp. 12886	Paper discusses indirect impact of nutrient loads in soil after GBH application. Not relevant to EU ecotoxicology assessment.
818	Ecotoxicology	Ge HuiLin et al.	2014	Predicting joint toxicity of organophosphorus and triazine pesticides on green algae using the generalized concentration addition model.	China Environmental Science (2014), Vol. 34, No. 9, pp. 2413-2419	Discusses use of novel test approaches, not currently relevant to EU level risk assessment in ecotoxicology.

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819	Ecotoxicology	Georgieva E. et al.	2018	GLYPHOSATE-BASED HERBICIDE ALTERS THE HISTOLOGICAL STRUCTURE OF GILLS OF TWO ECONOMICALLY IMPORTANT CYPRINID SPECIES (COMMON CARP, CYPRINUS CARPIO AND BIGHEAD CARP, ARISTICHTHYS NOBILIS).	Applied Ecology and Environmental Research (2018), Vol. 16, No. 3, pp. 2295-2305	Observations in the paper cannot be related to the ANNEX I level EU risk assessment for renewal. Sub-lethal effects at the histopathological level are not considered in the EU level ecotoxicological risk assessment.
820	Ecotoxicology	Gertzog B. J. et al.	2011	Avoidance of three herbicide formulations by Eastern Red-backed Salamanders (<i>Plethodon cinereus</i>).	Herpetological Conservation and Biology (2011), Vol. 6, No. 2, pp. 237-241	Salamanders were exposed to glyphosate (and other pesticides) in a petri dish with avoidance measured. The endpoint is not relevant to the regulatory renewal of glyphosate.
821	Ecotoxicology	Geyer R. L. et al.	2016	Effects of Roundup formulations, nutrient addition, and Western mosquitofish (<i>Gambusia affinis</i>) on aquatic communities.	Environmental science and pollution research international (2016), Vol. 23, No. 12, pp. 11729-39	Formulations used do not match that of the representative formulation for the Annex I renewal. Effects from co-formulants cannot be excluded.
822	Ecotoxicology	Gherhardt T. et al.	2011	Avoidance behavior of <i>Eisenia foetida</i> to acetone, deltamethrin and glyphosate	Annals of West University of Timisoara, Series of Chemistry (2011), Vol. 20, No. 2, pp. 1-10	This study was a new design to look at the avoidance of earthworms to chemicals. The study was not conducted to a known guideline. For the glyphosate part of the study, all the worms died due to heat/dehydration and so the effects of glyphosate were not clearly determined and the endpoints are not relevant to the regulatory risk assessment of glyphosate.
823	Ecotoxicology	Gholami-Seyedkolaei S. J. et al.	2013	Effect of a glyphosate-based herbicide in <i>Cyprinus carpio</i> : assessment of acetylcholinesterase activity, hematological responses and serum biochemical parameters.	Ecotoxicology and environmental safety (2013), Vol. 98, pp. 135-41	Paper describes haematological and enzymatic biomarkers that could be used to assess the impact on fish in the field. There are no data presented that could be used in EU level Annex I renewal Ecotoxicological risk assessment.
824	Ecotoxicology	Gholami-Seyedkolaei S. J. et al.	2013	Optimization of recovery patterns in common carp exposed to roundup using response surface methodology: evaluation of neurotoxicity and genotoxicity effects and biochemical parameters.	Ecotoxicology and environmental safety (2013), Vol. 98, pp. 152-61	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.
825	Ecotoxicology	Ghose S. L. et al.	2014	Acute toxicity tests and meta-analysis identify gaps in tropical ecotoxicology for amphibians	Environmental Toxicology and Chemistry (2014), Vol. 33, No. 9, pp. 2114-2119	Paper does not present endpoint data on the representative formulation. Therefore not relevant.
826	Ecotoxicology	Giaquinto P. C. et al.	2017	Effects of Glyphosate-Based Herbicide Sub-Lethal Concentrations on Fish Feeding Behavior.	Bulletin of environmental contamination and toxicology (2017), Vol. 98, No. 4, pp. 460-464	Test design and endpoints are not used in EU level risk assessment for ANNEX I renewal.
827	Ecotoxicology	Givaudan N. et al.	2014	Earthworm tolerance to residual agricultural pesticide contamination: field and experimental assessment of detoxification capabilities.	Environmental pollution (2014), Vol. 192, pp. 9-18	Study provides information at the cellular/molecular level and is not an ecotoxicological relevant study

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828	Ecotoxicology	Gomes M. P. et al.	2017	Effects of glyphosate acid and the glyphosate-commercial formulation (Roundup) on <i>Dimorphandra wilsonii</i> seed germination: Interference of seed respiratory metabolism.	Environmental pollution (2017), Vol. 220, No. Pt A, pp. 452-459	Findings are not relevant to an EU level Annex I risk assessment as this species is only found in Brazil.
829	Ecotoxicology	Griesinger L. M. et al.	2011	Effects of a glyphosate-based herbicide on mate location in a wolf spider that inhabits agroecosystems.	Chemosphere (2011), Vol. 84, No. 10, pp. 1461-6	Study looks at the potential impact of glyphosate product on wolf spider mate location. Conducted in the US. No relevant endpoints generated for use in the risk assessment for the renewal of glyphosate.
830	Ecotoxicology	Grzesiuk A. et al.	2018	EFFECT OF ROOT-ZONE GLYPHOSATE EXPOSURE ON GROWTH AND ANTHOCYANINS CONTENT OF RADISH SEEDLINGS	ACTA SCIENTIARUM POLONORUM-HORTORUM CULTUS (2018), Vol. 17, No. 2, pp. 3-10	Unable to establish what exposure concentrations were used in the study. Therefore not relevant to an EU level risk assessment for EU renewal.
831	Ecotoxicology	Gueller P. et al.	2018	Investigation of some pesticides' effects on activities of glutathione reductase and glutathione S-transferase purified from turkey liver under in vitro conditions.	Journal of the Institute of Science and Technology (2018), Vol. 8, No. 3, pp. 211-217	Paper describes an in vitro enzyme assay that cannot be related to an EU level ecotoxicological risk assessment.
832	Ecotoxicology	Guijarro K. H. et al.	2018	Soil microbial communities and glyphosate decay in soils with different herbicide application history.	The Science of the total environment (2018), Vol. 634, pp. 974-982	Soil dissipation in Argentina is difficult to relate and thus not relevant to EU risk assessment.
833	Ecotoxicology	Guilherme S. et al.	2014	DNA and chromosomal damage induced in fish (<i>Anguilla anguilla</i> L.) by aminomethylphosphonic acid (AMPA)--the major environmental breakdown product of glyphosate.	Environmental science and pollution research international (2014), Vol. 21, No. 14, pp. 8730-9	The study assessed the impact of AMPA on <i>Anguilla anguilla</i> using COMET and ENA assays. The assays are not considered relevant to the ecotoxicological risk assessment for Annex I renewal. Therefore this paper should be considered non-relevant.
834	Ecotoxicology	Gutiérrez M. F. et al.	2017	Disruption of the hatching dynamics of zooplankton egg banks due to glyphosate application.	Chemosphere (2017), Vol. 171, pp. 644-653	Endpoints based on abundance are used in EU level ecotoxicological risk assessment. The formulation used is not the representative formulation and therefore the impact of co-formulants cannot be excluded. Therefore this study is not relevant to the Annex I renewal.
835	Ecotoxicology	Hagner M. et al.	2019	Effects of a glyphosate-based herbicide on soil animal trophic groups and associated ecosystem functioning in a northern agricultural field	Scientific Reports (2019), Vol. 9, No. 1, pp. 1-13	This study looked at the effect of Roundup + hoeing on soil organisms. Effects on soil organisms based on Roundup alone cannot be determined from the presented data test groups. The test substance used is also based MON 78294 which is not the representative formulation for the Annex I renewal.
836	Ecotoxicology	Hanlon S. M. et al.	2012	The impact of pesticides on the pathogen <i>Batrachochytrium dendrobatidis</i> independent of potential hosts.	Archives of environmental contamination and toxicology (2012), Vol. 63, No. 1, pp. 137-43	Paper discusses the impact of various pesticides on fungal spores using approaches that generate endpoints not used in EU ecotoxicology risk assessment for Annex I renewal.
837	Ecotoxicology	Hanlon S. M. et al.	2014	The interactive effects of chytrid fungus, pesticides, and exposure timing on gray treefrog (<i>Hyla versicolor</i>) larvae.	Environmental toxicology and chemistry (2014), Vol. 33, No. 1, pp. 216-22	Contains POEA and thus not relevant to the EU level Annex I ecotoxicological risk assessment.

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838	Ecotoxicology	Hasan F. et al.	2016	Ecotoxicological hazards of herbicides on biological attributes of <i>Zygogramma bicolorata</i> Pallister (Coleoptera: Chrysomelidae).	Chemosphere (2016), Vol. 154, pp. 398-407	Novel surface residue exposure study that presents endpoint data that is not reliable to the EU level risk assessment.
839	Ecotoxicology	Hefnawy M. A. et al.	2012	Interaction of some herbicides with phosphate solubilization by <i>Aspergillus niger</i> and <i>Aspergillus fumigatus</i> .	Australian Journal of Basic and Applied Sciences (2012), Vol. 6, No. 10, pp. 518-524	Findings are not directly related to the effects of glyphosate on the organism.
840	Ecotoxicology	Herbert L. T. et al.	2014	Effects of field-realistic doses of glyphosate on honeybee appetitive behaviour.	The Journal of experimental biology (2014), Vol. 217, No. Pt 19, pp. 3457-64	Endpoints described are not currently relevant to EU level ecotoxicology risk assessment.
841	Ecotoxicology	Hill M. P. et al.	2012	Toxic effect of herbicides used for water hyacinth control on two insects released for its biological control in South Africa	Biocontrol science and technology (2012), pp. 1321-1333	Non-EU monitoring study. Extrapolation to EU is difficult.
842	Ecotoxicology	Hirano L. Q. L. et al.	2019	Effects of egg exposure to atrazine and/or glyphosate on bone development in <i>Podocnemis unifilis</i> (Testudines, Podocnemididae).	Ecotoxicology and environmental safety (2019), Vol. 182, pp. 109400	Test approaches and observations performed are not reliable to EU level risk assessment.
843	Ecotoxicology	Hong Y. et al.	2018	Assessment of the oxidative and genotoxic effects of the glyphosate-based herbicide roundup on the freshwater shrimp, <i>Macrobrachium nipponensis</i> .	Chemosphere (2018), Vol. 210, pp. 896-906	Study conducted using a formulation of glyphosate that is not the representative formulation for the EU renewal.
844	Ecotoxicology	Houssou A. M. et al.	2017	Lethal and sub-lethal effects of cypermethrin and glyphosate on the freshwater's copepod, <i>Acanthocyclops robustus</i> .	ISI-Invertebrate Survival Journal (2017), Vol. 14, pp. 140-148	The test species selected is also not described and environmental holding conditions (water quality) prior to and during the study were not indicated). The formulation (Kumark® (480 g/L) is not the representative formulation for the EU Annex I renewal (MON 52276). The study was not conducted to a guideline, but the acute toxicity test can be considered in-line with OECD guideline 202. According to OECD 202, the validity criteria are not met for Glyphosate (> 10 % mortality in the control). Additionally, there were no quantifiable endpoints presented in the paper to a non-standard species. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
845	Ecotoxicology	Hued A. C. et al.	2012	Exposure to a commercial glyphosate formulation (Roundup®) alters normal gill and liver histology and affects male sexual activity of <i>Jenynsia multidentata</i> (Anablepidae, Cyprinodontiformes).	Archives of environmental contamination and toxicology (2012), Vol. 62, No. 1, pp. 107-117	Not the representative formulation. The formulation Roundup Max is based on MON 14420, which is not MON 52276, the representative formulation used in the renewal process.

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846	Ecotoxicology	Iannilli V. et al.	2019	Genotoxic effects induced by glyphosate-based herbicide on two gammarid species: the invasive <i>Dikerogammarus villosus</i> (Sowinsky, 1894) (Crustacea, Amphipoda) and the native <i>Echinogammarus veneris</i> (Heller, 1865).	Fundamental and Applied Limnology (2019), Vol. 193, No. 2, pp. 143-153	Endpoints cannot be used in an EU ecotoxicological risk assessment for Annex I renewal.
847	Ecotoxicology	Imre P. et al.	2018	TOXICITY TEST OF INDIVIDUAL AND COMBINED TOXIC EFFECTS OF HERBICIDE AMEGA AND COPPER-SULPHATE ON PHEASANT EMBRYOS. Original Title: AMEGA GYOMIRTO SZERES A REZ-SZULFAT EGYEDI ES EGYUTTES MEREGHATASNAK VIZSGALATA FACANEMBRIOKBAN.	Novenydelem (2018), Vol. 54, No. 11, pp. 476-482	It is not possible to relate the observed effects in the study to the ecotoxicology risk assessment for EU renewal.
848	Ecotoxicology	Iori S. et al.	2019	The effects of glyphosate and AMPA on the mediterranean mussel <i>Mytilus galloprovincialis</i> and its microbiota.	Environmental research (2019), Vol. 182, pp. 108984	Paper discusses the effects of glyphosate at the molecular level which not used in an EU level assessment or renewal.
849	Ecotoxicology	Iummato M. M. et al.	2013	Evaluation of biochemical markers in the golden mussel <i>Limnoperna fortunei</i> exposed to glyphosate acid in outdoor microcosms.	Ecotoxicology and environmental safety (2013), Vol. 95, pp. 123-9	Cellular level endpoints cannot be related to the Ecotoxicology Annex I renewal risk assessment.
850	Ecotoxicology	Janben R. et al.	2019	A Glyphosate Pulse to Brackish Long-Term Microcosms Has a Greater Impact on the Microbial Diversity and Abundance of Planktonic Than of Biofilm Assemblages	FRONTIERS IN MARINE SCIENCE (2019), Vol. 6, Article 758	Paper discusses a novel technique to monitor the effects of herbicide on brackish proteo bacteria and bacterial communities measuring 16S rRNA genes in samples of water accompanied by total cell counts and using operational taxonomic units. Whilst informative techniques were used, these data are not relevant to an EU level Annex I ecotoxicological risk assessment according to the 1107/2009 data requirements.
851	Ecotoxicology	Janssens L. et al.	2017	Stronger effects of Roundup than its active ingredient glyphosate in damselfly larvae.	Aquatic toxicology (2017), Vol. 193, pp. 210-216	Formulation tested contains POEA which is not present in the representative product in the EU renewal.
852	Ecotoxicology	Jantawongsri K. et al.	2015	Altered immune response of the rice frog <i>Fejervarya limnocharis</i> living in agricultural area with intensive herbicide utilization at Nan Province, Thailand.	Environment Asia (2015), Vol. 8, No. 1, pp. 68-74	Paper presents results of liver analyses from field collected frogs, in sites in Thailand where multiple pesticides have been used. Glyphosate was one of the chemicals used in the rice growing area, but no specific data relating to glyphosate that could be used in an EU level risk assessment is presented.
853	Ecotoxicology	Jaskulski D. et al.	2011	Effect of pre-harvest glyphosate application on grain germination and emergence of winter wheat self-sown plants. Wpływ glifosatu stosowanego przed zbiorem na kieikowanie ziarna i wschody samosiewow pszenicy ozimej.	Progress in Plant Protection (2011), Vol. 51, No. 2, pp. 927-931	Roundup energy (450 SL) is the test substance in this study which is not the representative product for the renewal of glyphosate. The study is conducted in winter wheat, this is not a use on the representative GAP table for the renewal.

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854	Ecotoxicology	Jayawardena U. A. et al.	2011	Acute and chronic toxicity of four commonly used agricultural pesticides on the Asian common toad, <i>Bufo melanostictus</i> schneider	Journal of the National Science Foundation of Sri Lanka (2011), Vol. 39, No. 3, pp. 267-276	Study was conducted with glyphosate product in Sri Lanka, determining the toxicity to the Asian common toad. Egg strands collected from a university park in Sri Lanka, whereupon the tadpoles were subsequently exposed up to 25 ppm glyphosate. Test concentrations were renewed weekly, with observations at 10 and 30 days on metamorphosis. 48hr LC50 values were determined for glyphosate. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
855	Ecotoxicology	Jayawardena U. A. et al.	2010	Toxicity of agrochemicals to common hourglass tree frog (<i>Polypedates cruciger</i>) in acute and chronic exposure.	International Journal of Agriculture and Biology (2010), Vol. 12, No. 5, pp. 641-648	Conducted with glyphosate product in Sri Lanka, studies look at the toxicity to the Common hourglass tree frog. Egg masses were collected from a university park in Sri Lanka, with tadpoles then exposed up to 1 ppm for a chronic test. Test concentrations were renewed weekly, observations made on metamorphosis. The material and methods lacks important information. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
856	Ecotoxicology	Jayawardena U. A. et al.	2017	Effects of agrochemicals on disease severity of <i>Acanthostomum burminis</i> infections (Digenea: Trematoda) in the Asian common toad, <i>Duttaphrynus melanostictus</i> .	BMC Zoology (2017), Vol. 2, No. 13, pp. 1	Discusses results of exposure of nematode disease rates to multiple a.i. including a glyphosate formulation containing POEA. POEA containing formulations are not relevant to EU level risk assessment.
857	Ecotoxicology	Jenkins M. B. et al.	2017	Impact of glyphosate-resistant corn, glyphosate applications and tillage on soil nutrient ratios, exoenzyme activities and nutrient acquisition ratios.	Pest management science (2017), Vol. 73, No. 1, pp. 78-86	Long term monitoring study that is not relevant for ecotoxicological risk assessment for Annex I glyphosate renewal.
858	Ecotoxicology	Jesenska S. et al.	2011	Species Sensitivity Distribution (SSD) - application in environmental risk assessment of pesticides in European rivers. Distribuce citlivosti druhu (Species Sensitivity Distribution - SSD) - využití pro hodnocení rizik pesticidů v evropských řekách.	Bulletin - VURH Vodňany (2011), Vol. 47, No. 3, pp. 29-38	Data for glyphosate was used in a SSD model to look at the river ecosystem (in Belgium). Concentrations were monitored at locations with the river basin and used in the model. Results were not relevant for the risk assessment.
859	Ecotoxicology	Jiang J. et al.	2017	Influence of commonly used pesticides on acute toxicity to earthworm <i>Eisenia fetida</i> and alteration of antioxidant enzyme activities.	Journal of Agro-Environment Science (2017), Vol. 36, No. 3, pp. 466-473	Acute toxicity to earthworms is not a data requirement in the EU level Annex I ecotoxicology risk assessment.
860	Ecotoxicology	Jin J. et al.	2018	Sub-lethal effects of herbicides penoxsulam, imazamox, fluridone and glyphosate on <i>Delta Smelt</i> (<i>Hypomesus transpacificus</i>).	Aquatic toxicology (2018), Vol. 197, pp. 79-88	Presented endpoints based on cellular levels of enzymes cannot be related to an Ecotoxicological risk assessment for Annex I renewal.

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861	Ecotoxicology	Jofre D. M. et al.	2015	Acute and chronic toxicity of glyphosate to native fish from San Luis province, Argentina	Current Topics In Toxicology (2015), Vol. 11, pp. 49-54	The tested formulation contains POEA and is therefore not relevant to the MON 52276 representative formulation for the Annex I renewal.
862	Ecotoxicology	Jones D. K. et al.	2010	Roundup and amphibians: the importance of concentration, application time, and stratification.	Environmental toxicology and chemistry (2010), Vol. 29, No. 9, pp. 2016-25	Glyphosate product tests performed with larval amphibians (wood frog and American toads) in an outdoor mesocosms in the US. Up to 3 mg ae/L was applied at 0, 7 and 14 days to the mesocosm, and replicated. Egg masses were collected from nearby ponds and hatched in culture ponds with aged well-water. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
863	Ecotoxicology	Jones D. K. et al.	2010	Competitive stress can make the herbicide Roundup more deadly to larval amphibians	Environmental Toxicology and Chemistry (2010), Vol. 30, No. 2, pp. 446-454	This study assessed competition as a stressor in conjunction with Roundup treatment in an outdoor mesocosm (USA) containing different densities of tadpoles (green frogs, gray tree frogs, american bullfrogs). Glyphosate product was applied up to 3 mg ae/L for 7 days with replication. Egg masses were collected from nearby ponds and hatched in wading pools with aged well-water. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
864	Ecotoxicology	Kalai K. et al.	2018	Haemato-biochemical alterations in induced acute glyphosate (C3H8NO5P) intoxication in Kuroiler birds	International Journal of Chemical Studies (2018), Vol. 6, No. 4, pp. 1-4	Paper contains data that cannot be related to an EU level ecotoxicology risk assessment.
865	Ecotoxicology	Karahan A. et al.	2018	Determination of the effect of some pesticides on honey bees.	International Journal of Agriculture, Environment and Food Sciences (2018), Vol. 2, No. 3, pp. 104-108	No effects observed from glyphosate exposure on body movement, however, endpoint not relevant for an EU level Annex I ecotoxicology risk assessment.
866	Ecotoxicology	Kelly D. W. et al.	2010	Synergistic effects of glyphosate formulation and parasite infection on fish malformations and survival	Journal of applied ecology (2010), Vol. 47, No. 2, pp. 498-504	Snails collected from a river in New Zealand. Study looks at exposure to glyphosate + POEA surfactant (diluted to 0.36 mg a.i./L), and parasite infection with particular emphasis on spinal malformation and survival of juvenile fish. The study also looks at the influence of glyphosate concentration on the rate of infection and survival of P. antipodarum snails. The paper does not contribute to the renewal of glyphosate in the EU.
867	Ecotoxicology	Khan A. et al.	2016	Comparative Study of Toxicological Impinge of Glyphosate And Atrazine (Herbicide) on Stress Biomarkers; Blood Biochemical and Haematological Parameters of the Freshwater Common Carp (Cyprinus carpio).	Polish Journal of Environmental Studies (2016), Vol. 25, No. 5, pp. 1995-2001	Molecular and chemical observations are not relevant to traditional ecotoxicological risk assessment. Population level effects may not be inferred from such observations.
868	Ecotoxicology	Kielak E. et al.	2011	Phytotoxicity of Roundup Ultra 360 SL in aquatic ecosystems: Biochemical evaluation with duckweed (Lemna minor L.) as a model plant	Pesticide biochemistry and physiology (2011), Vol. 99, No. 3, pp. 237-243	Use of glyphosate product in a study on lemna to assess the impact on biomass and Chlorophyll content of plants. This study was performed in Poland. The paper does not contribute to the renewal of glyphosate in the EU.

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869	Ecotoxicology	King J. J. et al.	2010	Toxic Effects of the Herbicide Roundup Regular on Pacific Northwestern Amphibians	Northwestern Naturalist (2010), Vol. 91, no. 3, pp. 318-324	Conducted in the US. Glyphosate product + POEA surfactant, used in a study to look at the effect on amphibians (collected from the wild, kept in aerated pond water until 24 hr after hatching), up to 5 mg/L, static tests, pH buffered with spring water, LC50 generated. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
870	Ecotoxicology	Kittle R. P. et al.	2018	Effects of glyphosate herbicide on the gastrointestinal microflora of Hawaiian green turtles (<i>Chelonia mydas</i>) Linnaeus.	Marine pollution bulletin (2018), Vol. 127, pp. 170-174	Discusses a novel technique using isolated strains of bacteria from turtle guts to assess their sensitivity to glyphosate. Findings not relevant to an EU level ecotoxicology risk assessment for Annex I renewal.
871	Ecotoxicology	Koakoski G. et al.	2014	Agrichemicals chronically inhibit the cortisol response to stress in fish.	Chemosphere (2014), Vol. 112, pp. 85-91	End-points based on measured stress hormones are not relevant to an EU level Annex I ecotoxicology risk assessment for renewal.
872	Ecotoxicology	Kondera E. et al.	2018	Effect of glyphosate-based herbicide on hematological and hemopoietic parameters in common carp (<i>Cyprinus carpio</i> L).	Fish physiology and biochemistry (2018), Vol. 44, No. 3, pp. 1011-1018	End-points presented are not relevant to an EU level risk assessment for glyphosate renewal in the EU.
873	Ecotoxicology	Koprivnikar J. et al.	2012	Agricultural effects on amphibian parasitism: importance of general habitat perturbations and parasite life cycles.	Journal of wildlife diseases (2012), Vol. 48, No. 4, pp. 925-36	Pond sampling / monitoring study performed in Canada. Not relevant to an EU level ecotoxicology risk assessment for Annex I renewal.
874	Ecotoxicology	Kostopoulou S. et al.	2020	Assessment of the effects of metribuzin, glyphosate, and their mixtures on the metabolism of the model plant <i>Lemna minor</i> L. applying metabolomics.	Chemosphere (2020), Vol. 239, pp. 124582	The paper describes a metabolomics approach to establish the impact of glyphosate alone and mixtures with metribuzin on the metabolome of <i>lemna</i> . Novel approach to biomarker detection is not considered in an EU level assessment.
875	Ecotoxicology	Krynak K. L. et al.	2017	Rodeo (TM) Herbicide Negatively Affects Blanchard's Cricket Frogs (<i>Acris blanchardi</i>) Survival and Alters the Skin-Associated Bacterial Community.	Journal of Herpetology (2017), Vol. 51, No. 3, pp. 402-410	Uses a formulation that is not relevant to the EU renewal of Glyphosate. (RODEO)
876	Ecotoxicology	Lacaze E. et al.	2010	Genotoxicity assessment in the amphipod <i>Gammarus fossarum</i> by use of the alkaline Comet assay	Mutation Research, Genetic Toxicology and Environmental Mutagenesis (2010), Vol. 700, No. 1-2, pp. 32-38	This study is the development of an assay. Endpoints cannot be used in the regulatory risk assessment of glyphosate.
877	Ecotoxicology	Lajmanovich R. C. et al.	2011	Toxicity of four herbicide formulations with glyphosate on <i>Rhinella arenarum</i> (anura: bufonidae) tadpoles: B-esterases and glutathione S-transferase inhibitors.	Archives of environmental contamination and toxicology (2011), Vol. 60, No. 4, pp. 681-9	Compared toxicity to tadpoles exposed to a range of glyphosate products up to 240 mg ae/L for 48 hrs, enzyme activity was measured. Tadpoles collected from the wild (non-agricultural areas in Argentina, acclimated for 48 hrs). LC50 generated with very high concentrations tested.
878	Ecotoxicology	Lajmanovich R. C. et al.	2013	Individual and Mixture Toxicity of Commercial Formulations Containing Glyphosate, Metsulfuron-Methyl, Bispiribac-Sodium, and Picloram on <i>Rhinella arenarum</i> Tadpoles.	Water Air and Soil Pollution (2013), Vol. 224, No. 3, pp. Article No.: 1404	Formulation used in the testing is not the representative formulation for the Annex I renewal. Also difficult to relate the cellular and molecular level endpoints to an Annex I ecotoxicology risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
879	Ecotoxicology	Lallana M. d. C. et al.	2013	Determination of root length reduction (EC50) by a glyphosate formulation using lettuce and wheat as biological indicator species. Original Title: Determinación de reducción del crecimiento radical (CE50) por una formulación de glifosato utilizando lechuga	Revista de la Facultad de Ciencias Agrarias Universidad Nacional de Cuyo (2013), Vol. 45, No. 1, pp. 143-151	Endpoints presented were not generated using a test design that reflects use in the field and as such is not considered relevant / relevant to an EU level risk assessment for PPP Annex I renewal.
880	Ecotoxicology	Lance E. et al.	2016	Accumulation and detoxication responses of the gastropod <i>Lymnaea stagnalis</i> to single and combined exposures to natural (cyanobacteria) and anthropogenic (the herbicide RoundUp® Flash) stressors.	Aquatic toxicology (2016), Vol. 177, pp. 116-24	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.
881	Ecotoxicology	Lancot C. et al.	2013	Effects of the glyphosate-based herbicide Roundup WeatherMax® on metamorphosis of wood frogs (<i>Lithobates sylvaticus</i>) in natural wetlands.	Aquatic toxicology (2013), Vol. 140-141, pp. 48-57	Roundup WeatherMAX contains surfactants that are not relevant to the EU level renewal of glyphosate onto Annex I.
882	Ecotoxicology	Lancot C. et al.	2014	Effects of glyphosate-based herbicides on survival, development, growth and sex ratios of wood frog (<i>Lithobates sylvaticus</i>) tadpoles. II: agriculturally relevant exposures to Roundup WeatherMax® and Vision® under laboratory conditions.	Aquatic toxicology (2014), Vol. 154, pp. 291-303	The tested formulation contains POEA and is therefore not relevant to the MON 52276 representative formulation for the Annex I renewal.
883	Ecotoxicology	Lanzarin G. A. B. et al.	2019	Dose-dependent effects of a glyphosate commercial formulation - Roundup® UltraMax - on the early zebrafish embryogenesis.	Chemosphere (2019), Vol. 223, pp. 514-522	Paper concerns a Roundup formulation that is not the representative formulation for the Annex I renewal.
884	Ecotoxicology	Latorre M. A. et al.	2013	Effects of in vivo exposure to Roundup® on immune system of Caiman latirostris.	Journal of immunotoxicology (2013), Vol. 10, No. 4, pp. 349-54	This study provided blood chemistry analysis for Caiman exposed to Roundup for long periods. These data are not considered to be relevant to the EU level ecotoxicology risk assessment for Annex I renewal. Roundup used also contains POEA, which is a surfactant system not present in the representative formulation.
885	Ecotoxicology	Lewis N. A. et al.	2015	Level of UV-B radiation influences the effects of glyphosate-based herbicide on the spotted salamander.	Ecotoxicology (2015), Vol. 24, No. 5, pp. 1073-86	Study investigates the effect on different UV light regimes on the effects on glyphosate on salamanders. As no specific effects and concentrations related to glyphosate alone are not mentioned, the findings are not relevant to an EU level renewal assessment for annex I.
886	Ecotoxicology	Levis N. A. et al.	2016	Non-adaptive phenotypic plasticity: the effects of terrestrial and aquatic herbicides on larval salamander morphology and swim speed	Biological journal of the Linnean Society (2016), Vol. 118, No. 3, pp. 569-581	Adaptive phenotypic plasticity is not an endpoint / observed parameter considered in the EU level ecotoxicology risk assessment for Annex I renewal.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
887	Ecotoxicology	Li M. et al.	2017	Metabolic profiling of goldfish (<i>Carassius auratus</i>) after long-term glyphosate-based herbicide exposure.	Aquatic toxicology (2017), Vol. 188, pp. 159-169	Metabolomic approaches to assessing the fate of pesticides in organisms looks specifically at cellular and molecular level based endpoints that are not used in the EU level ecotoxicology risk assessment for Annex I renewal.
888	Ecotoxicology	Li P.-L. et al.	2015	Response of <i>Nitzschia amplexans</i> in growth and kinesis to glyphosate original powder	Nongyao (2015), Vol. 54, No. 2, pp. 108-111	Based on Roundup Original which contains POEA which is not relevant at EU level for MON 52276 renewal. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the renewal.
889	Ecotoxicology	Li Q. et al.	2013	Effects of herbicides application on allelopathic potential of <i>Eupatorium catatum</i> .	Allelopathy Journal (2013), Vol. 31, No. 1, pp. 139-146	Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity).
890	Ecotoxicology	Li Y. et al.	2019	Acute exposure of glyphosate-based herbicide induced damages on common carp organs via heat shock proteins-related immune response and oxidative stress	Toxin Reviews (2019), Ahead of Print, https://doi.org/10.1080/15569543.2019.1621903	Formulation is not the representative formulation for the ANNEX I renewal of glyphosate. As the identity of the powder and the form in which it was supplied (salt type, to establish acid equivalence content) cannot be confirmed. Co-formulants are also unknown.
891	Ecotoxicology	Lipok J. et al.	2010	The toxicity of Roundup® 360 SL formulation and its main constituents: glyphosate and isopropylamine towards non-target water photoautotrophs.	Ecotoxicology and environmental safety (2010), Vol. 73, No. 7, pp. 1681-8	Uses glyphosate product, study looking at impact on marine microbial (algae) communities (14 d old log-phase cultures used), exposed up to 3mM of GLY. EC50 generated. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
892	Ecotoxicology	Liu C. et al.	2012	Size-controlled preparation of hollow silica spheres and glyphosate release	Transactions of Nonferrous Metals Society of China (2012), Vol. 22, No. 5, pp. 1161-1168	This paper relates to the development of a silica capsule. Glyphosate is mentioned as the example chemical that demonstrates increased release rate with thinning of the capsule wall. Not relevant for 2022 ecotox renewal risk assessment.
893	Ecotoxicology	Lo C.-C.	2010	Effect of pesticides on soil microbial community.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2010), Vol. 45, No. 5, pp. 348-59	Conducted in China. Review of toxicity studies to look at the effect of glyphosate and other chemistry to soil microflora. As it's a review of other data it doesn't bring any specific endpoint to the Regulatory risk assessment of glyphosate renewal.
894	Ecotoxicology	Lopes da Silva E. T. et al.	2016	LETHAL CONCENTRATION OF GLYPHOSATE FOR JUVENILES OF CURIMATA-PACU. Original Title: CONCENTRACAO LETAL DO GLIFOSATO PARA JUVENIS DE CURIMATA-PACU.	Boletim Do Instituto De Pesca (2016), Vol. 42, No. 4, pp. 759-764	Concerns a formulation of Glyphosate (ATANOR®) that is not the representative formulation for the Annex I renewal.
895	Ecotoxicology	Lopes F. M. et al.	2018	Toxicity induced by glyphosate and glyphosate-based herbicides in the zebrafish hepatocyte cell line (ZF-L).	Ecotoxicology and environmental safety (2018), Vol. 162, pp. 201-207	The formulated product used in the test contains MON 2139 which contains POEA (MON0818). Therefore findings are not relevant to the EU level renewal as are not representative formulation for the Annex I renewal.
896	Ecotoxicology	Lopes F. M. et al.	2017	Glyphosate Adversely Affects Damio rerio Males: Acetylcholinesterase Modulation and Oxidative Stress.	Zebrafish (2017), Vol. 14, No. 2, pp. 97-105	Endpoints not relevant to an EU level ecotoxicology risk assessment for Annex I renewal.
897	Ecotoxicology	Lopes F. M. et al.	2014	Effect of glyphosate on the sperm quality of zebrafish <i>Danio rerio</i> .	Aquatic toxicology (2014), Vol. 155, pp. 322-6	Endpoint not used in EU level ecotoxicology risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
898	Ecotoxicology	Louch J. et al.	2017	Potential risks to freshwater aquatic organisms following a silvicultural application of herbicides in Oregon's Coast Range.	Integrated environmental assessment and management (2017), Vol. 13, No. 2, pp. 396-409	This is a specific non-EU monitoring study that cannot be related to an EU level ecotoxicology risk assessment for Annex I renewal.
899	Ecotoxicology	Lozano V. L. et al.	2018	Effects of glyphosate and 2,4-D mixture on freshwater phytoplankton and periphyton communities: a microcosms approach	Ecotoxicology and Environmental Safety (2018), Vol. 148, pp. 1010-1019	The focus of the study was on phytoplankton and periphyton communities. However, no information on the source and history of the phytoplankton and periphyton communities are given. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment. (The glyphosate formulation Glifosato Atanor® was used in the microcosm study). In addition, no regulatory useful endpoint was derived.
900	Ecotoxicology	Lyons M. et al.	2018	Effects of 4-nonylphenol and formulations of five pesticides: cypermethrin, deltamethrin, glyphosate, imidacloprid and mancozeb on growth of Atlantic salmon (<i>Salmo salar</i> L.) during parr-smolt transformation.	Canadian Technical Report of Fisheries and Aquatic Sciences (2018), Vol. 3265, pp. 1-42	Fish exposed to a glyphosate formulation that is not the representative formulation for the Annex I renewal.
901	Ecotoxicology	Ma J. et al.	2015	Alteration in the cytokine levels and histopathological damage in common carp induced by glyphosate.	Chemosphere (2015), Vol. 128, pp. 293-8	Endpoints not relatable to an EU level risk assessment for Annex I renewal.
902	Ecotoxicology	Ma J. et al.	2015	Immunological and histopathological responses of the kidney of common carp (<i>Cyprinus carpio</i> L.) sublethally exposed to glyphosate.	Environmental toxicology and pharmacology (2015), Vol. 39, No. 1, pp. 1-8	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.
903	Ecotoxicology	Ma J. et al.	2019	Biochemical and molecular impacts of glyphosate-based herbicide on the gills of common carp.	Environmental pollution (2019), Vol. 252, No. Pt B, pp. 1288-1300	Paper discusses biochemical and molecular impacts that are not relatable to an EU level RA for Annex I renewal
904	Ecotoxicology	Magana D. A. et al.	2013	Side-effects of herbicides applied in soybean <i>Trichogramma pretiosum</i> . Efeitos secundarios de herbicidas aplicados em soja sobre <i>Trichogramma pretiosum</i> .	Pesquisa Agropecuaria Gaucha (2013), Vol. 19, No. 1/2, pp. 69-80	The formulations used that contain glyphosate were Glyphosate Atanor and Roundup Original. The Roundup formulation contains POEA and is therefore not relevant for the EU. Concerning ATANOR, this is not the representative formulation and it is difficult to relate the observed effects with the ecotoxicology risk assessment for EU Annex I renewal of MON 52276.
905	Ecotoxicology	Magbanua F. S. et al.	2013	Understanding the combined influence of fine sediment and glyphosate herbicide on stream periphyton communities.	Water research (2013), Vol. 47, No. 14, pp. 5110-20	This study investigated the combination of sediment and glyphosate effects on an mesocosm community. Results not relatable to an EU level ecotoxicological risk assessment.
906	Ecotoxicology	Magbanua F. S. et al.	2013	Individual and combined effects of fine sediment and the herbicide glyphosate on benthic macroinvertebrates and stream ecosystem function	Freshwater biology (2013), Vol. 58, No. 8, pp. 1729-1744	Paper describes a specific multiple mesocosm study conducted in New Zealand using an undefined source of glyphosate.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
907	Ecotoxicology	Malecot M. et al.	2013	Specific proteomic response of <i>Union pictorum</i> mussel to a mixture of glyphosate and microcystin-LR.	Journal of proteome research (2013), Vol. 12, No. 11, pp. 5281-92	Observed findings are not relatable to an EU level ecotoxicological risk assessment for Annex I purposes.
908	Ecotoxicology	Mandl K. et al.	2018	Effects of Glyphosate-, Glufosinate- and Flazasulfuron-Based Herbicides on Soil Microorganisms in a Vineyard.	Bulletin of environmental contamination and toxicology (2018), Vol. 101, No. 5, pp. 562-569	The product used was Roundup Powerflex, which is based on MON 79351 that contains 47.6% acid equivalence, and not MON 52276. Endpoints based on bacterial CFUs are difficult to relate to an ecotoxicological Annex I risk assessment. The work was also conducted in a vineyard that had a history of other pesticides being used. As identified by the Author, this cannot be excluded as having influenced the findings.
909	Ecotoxicology	Alvarez M. et al.	2012	Toxicity in fishes of herbicides formulated with glyphosate	Acta Toxicologica Argentina (2012), Vol. 20, No. 1, pp. 5-13	Two formulations and a test solution prepared using technical material were used. The two formulations were glaxoxan and Roundup. The Roundup contains POEA and therefore is not relevant to the EU. The Glaxoxan is a home and garden use formulation that is not related to the representative formulation. It is therefore not relevant to an EU level risk assessment for the Annex I renewal.
910	Ecotoxicology	Maria M. A. et al.	2018	Evaluation of glyphosate effect concentration to control <i>Eichhornia crassipes</i> and <i>Salvinia</i> sp. Avaliação da concentração de efeito do glifosato para controle de <i>Eichhornia crassipes</i> e <i>Salvinia</i> sp.	Engenharia Sanitaria e Ambiental (2018), Vol. 23, No. 5, pp. 881-889	On translated paper review, it is apparent that the study was conducted with a formulation (Roundup Original) that contains POEA - uncertain if observed effects were due to product or down to the action of POEA. POEA is not in the Annex I representative formulation and therefore these findings are not relevant to the ecotoxicology risk assessment for renewal.
911	Ecotoxicology	Martin L. J. et al.	2013	A preliminary assessment of the response of a native reptile assemblage to spot-spraying invasive Bitou Bush with glyphosate herbicide.	Ecological Management & Restoration (2013), Vol. 14, No. 1, pp. 59-62	NON-EU long term monitoring site, therefore non-relatable to EU level ANNEX I renewal.
912	Ecotoxicology	Marusca T.	2017	Oversowing or resowing of subalpine grassland appointed after the dynamics of floristic composition.	Romanian Journal of Grassland and Forage Crops (2017), No. 15, pp. 45-55	Study describes ecological succession and not specific effects of glyphosate on NTOs, therefore not relevant to EU level Annex I ecotoxicology risk assessment.
913	Ecotoxicology	Mateos-Naranjo E. et al.	2013	Effects of sub-lethal glyphosate concentrations on growth and photosynthetic performance of non-target species <i>Bolboschoenus maritimus</i> .	Chemosphere (2013), Vol. 93, No. 10, pp. 2631-8	End-points not considered relevant to an EU level risk assessment (ecotoxicology) for Annex I renewal.
914	Ecotoxicology	Matozzo V. et al.	2018	Ecotoxicological risk assessment for the herbicide glyphosate to non-target aquatic species: A case study with the mussel <i>Mytilus galloprovincialis</i> .	Environmental pollution (2018), Vol. 233, pp. 623-632	No control data are presented. The concept of up and down-regulation of genes following exposure to glyphosate within the context of a risk assessment is not relatable to the EU renewal. The purity of the test substance is not presented so dosing cannot be confirmed. The environmental conditions of the exposure phase are not presented other than salinity and temperature. No positive control included.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
915	Ecotoxicology	Matozzo V. et al.	2018	Effects of aminomethylphosphonic acid, the main breakdown product of glyphosate, on cellular and biochemical parameters of the mussel <i>Mytilus galloprovincialis</i>	Fish & shellfish immunology (2018), Vol. 83, pp. 321-329	Cellular level parameters discussed in paper, with endpoints that are not relevant to an Annex I renewal from ecotoxicology perspective.
916	Ecotoxicology	Matozzo V. et al.	2019	Glyphosate affects haemocyte parameters in the clam <i>Ruditapes philippinarum</i> .	Marine environmental research (2019), Vol. 146, pp. 66-70	Paper contains data that cannot be related to an EU level ecotoxicology risk assessment.
917	Ecotoxicology	Matozzo V. et al.	2019	Ecotoxicological hazard of a mixture of glyphosate and aminomethylphosphonic acid to the mussel <i>Mytilus galloprovincialis</i> (Lamarck 1819).	Scientific reports (2019), Vol. 9, No. 1, pp. 14302	End-points based on enzyme levels cannot be related to the EU level Annex I risk assessment.
918	Ecotoxicology	Matozzo V. et al.	2018	Ecotoxicological risk assessment for the herbicide glyphosate to non-target aquatic species: A case study with the mussel <i>Mytilus galloprovincialis</i>	Environmental pollution (2018), Vol. 233, pp. 623-632	Molecular level results that are not related to an EU level ecotoxicology risk assessment.
919	Ecotoxicology	McNally S. R. et al.	2017	Herbicide application during pasture renewal initially increases root turnover and carbon input to soil in perennial ryegrass and white clover pasture	Plant and soil (2017), Vol. 412, No. 1-2, pp. 133-142	Looks at root turnover as a means of sequestering carbon into soils. No specific endpoints useable in ecotoxicology EU level risk assessment for EU Annex I renewal.
920	Ecotoxicology	McVey K. A. et al.	2016	Exposure of <i>C. elegans</i> eggs to a glyphosate-containing herbicide leads to abnormal neuronal morphology.	Neurotoxicology and teratology (2016), Vol. 55, pp. 23-31	The article does not report results, which can be used for risk assessment and information is insufficient to transfer values into such determinants.
921	Ecotoxicology	Medeiros E. V. d. et al.	2014	Impact of glyphosate on microbial attributes of soil planted with two species of passion fruit.	Revista Caatinga (2014), Vol. 27, No. 1, pp. 1-8	Non-EU soil based comparative experiment to establish the impact of glyphosate on bacterial populations in soil for two different species of passion fruit in Brazil. The test design was described without specific detail on the amount of glyphosate being applied so any impacts could not be related to exposure. Therefore findings cannot be related to an EU level risk assessment for Annex I renewal.
922	Ecotoxicology	Mekhed O. B. et al.	2013	Impact of Water Pollution by Herbicides Zenkor and Roundup on Metabolism in Liver of Fishes of the Fam. Cyprinidae.	Hydrobiological Journal (2013), Vol. 49, No. 5, pp. 74-80	Molecular level results that are not related to an EU level ecotoxicology risk assessment.
923	Ecotoxicology	Menendez-Helman R. J. et al.	2015	Subcellular energy balance of <i>Odontesthes bonariensis</i> exposed to a glyphosate-based herbicide.	Ecotoxicology and environmental safety (2015), Vol. 114, pp. 157-63	Molecular level results that are not related to an EU level ecotoxicology risk assessment.
924	Ecotoxicology	Menezes C. W. G. et al.	2012	Reproductive and toxicological impacts of herbicides used in <i>Eucalyptus</i> culture in Brazil on the parasitoid <i>Palmistichus elaeisis</i> (Hymenoptera: Eulophidae)	Weed research (2012), Vol. 52, No. 6, pp. 520-525	Article not investigating properties of the active substance glyphosate. The articles does not cover any data requirement under EC Regulation 1107/2009.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
925	Ecotoxicology	Mensah P. et al.	2012	Using growth measures in the freshwater shrimp <i>Caridina nilotica</i> as biomarkers of Roundup registered pollution of South African freshwater systems	Physics and Chemistry of the Earth, Parts A/B/C (2012), Vol. 50, pp. 262-268	The formulation is based on MON 2139, which contains MON 0818 (that includes POEA) which is not relevant for the EU representative formulation. The confounding effects of POEA on the results cannot be excluded as no glyphosate technical grade only treatments were included, therefore findings are considered relevant to EU level ecotoxicology risk assessment for Annex I renewal.
926	Ecotoxicology	Mensah P. K. et al.	2012	Acetylcholinesterase activity in the freshwater shrimp <i>Caridina nilotica</i> as a biomarker of Roundup (R) herbicide pollution of freshwater systems in South Africa.	Water Science and Technology (2012), Vol. 66, No. 2, pp. 402-408	Formulation used in the study contains POEA that is not relevant to the EU renewal.
927	Ecotoxicology	Meshkini S. et al.	2019	The acute and chronic effect of Roundup herbicide on histopathology and enzymatic antioxidant system of <i>Oncorhynchus mykiss</i> .	International Journal of Environmental Science and Technology (2019), Vol. 16, No. 11, pp. 6847-6856	Roundup was used which contains POEA. This is not the representative formulation for the Annex I renewal.
928	Ecotoxicology	Mestre A. P. et al.	2019	Effects of cypermethrin (pyrethroid), glyphosate and chlorpyrifos (organophosphorus) on the endocrine and immune system of <i>Salvator merianae</i> (Argentine tegu).	Ecotoxicology and environmental safety (2019), Vol. 169, pp. 61-67	Formulation of glyphosate considered in the paper is not the representative formulation being considered for the Annex I renewal in EU.
929	Ecotoxicology	Meza-Joya F. L. et al.	2013	Toxic, cytotoxic, and genotoxic effects of a glyphosate formulation (Roundup®SL-CosmoFlux®411F) in the direct-developing frog <i>Eleutherodactylus johnstonei</i> .	Environmental and molecular mutagenesis (2013), Vol. 54, No. 5, pp. 362-73	Study is conducted on a formulation of glyphosate that is not the representative formulation in the EU.
930	Ecotoxicology	Miko Z. et al.	2017	Effects of a glyphosate-based herbicide and predation threat on the behaviour of agile frog tadpoles.	Ecotoxicology and environmental safety (2017), Vol. 140, pp. 96-102	The results of the study are not based on direct toxic effects of glyphosate to tadpoles, but are based on the interactive effects in the presence of predators. Endpoints of this type are not used in EU level risk assessment for Annex I renewal purposes.
931	Ecotoxicology	Miko Z. et al.	2017	Standardize or Diversify Experimental Conditions in Ecotoxicology? A Case Study on Herbicide Toxicity to Larvae of Two Anuran Amphibians.	Archives of environmental contamination and toxicology (2017), Vol. 73, No. 4, pp. 562-569	Formulation Glyphogan Classic used in the study contains POEA which is not relevant to an EU level risk assessment for the representative formulation MON 52276 that does not contain POEA.
932	Ecotoxicology	Milan M. et al.	2018	Ecotoxicological effects of the herbicide glyphosate in non-target aquatic species: Transcriptional responses in the mussel <i>Mytilus galloprovincialis</i> .	Environmental pollution (2018), Vol. 237, pp. 442-451	No control data are presented. The concept of up and down-regulation of genes following exposure to glyphosate within the context of a risk assessment is not relevant to the EU renewal. The purity of the test substance is not presented so dosing cannot be confirmed. The environmental conditions of the exposure phase are not presented other than salinity and temperature. No positive control included.
933	Ecotoxicology	Mingo V. et al.	2019	Validating buccal swabbing as a minimal-invasive method to detect pesticide exposure in squamate reptiles.	Chemosphere (2019), Vol. 229, pp. 529-537	This paper describes a novel approach to taking samples from wall lizards for subsequent enzymatic analysis for the detection of pesticide effects. No data were presented that could be used in an EU level RA for renewal. Non representative formulation.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
934	Ecotoxicology	Mona M. H. et al.	2013	Evaluation of cytotoxic effects of atrazine and glyphosate herbicides on <i>Biomphalaria glabrata</i> snails.	Journal of Basic and Applied Zoology (2013), Vol. 66, No. 2, pp. 68-75	Paper discusses a RAPD-PCR technique for detecting genotoxic damage. Formulation tested (Herfosat, Egypt; not characterized/described further). The data are not relatable to an EU level risk assessment for Annex I renewal.
935	Ecotoxicology	Mondal S. et al.	2017	Phytotoxicity of glyphosate in the germination of <i>Pisum sativum</i> and its effect on germinated seedlings.	Environmental health and toxicology (2017), Vol. 32, pp. e2017011	Test design not relevant to EU level ecotoxicological risk assessment for Annex I renewal.
936	Ecotoxicology	Monquero P. A. et al.	2016	Initial growth of tree species under herbicide drift.	Revista de Ciencias Agrarias / Amazonian Journal of Agricultural and Environmental Sciences (2016), Vol. 59, No. 2, pp. 162-172	Direct application to trees is not a proposed use of glyphosate and such end-points are not used in the EE level risk assessment for glyphosate renewal.
937	Ecotoxicology	Monte T. C. C. et al.	2019	Changes in hemocytes of <i>Biomphalaria glabrata</i> infected with <i>Echinostoma paraensei</i> and exposed to glyphosate-based herbicide.	Journal of invertebrate pathology (2019), Vol. 160, pp. 67-75	Relates to snails being exposure to a formulation of glyphosate that is not the representative formulation at Annex I for the EU.
938	Ecotoxicology	Moore L. J. et al.	2012	Relative toxicity of the components of the original formulation of Roundup to five North American anurans.	Ecotoxicology and environmental safety (2012), Vol. 78, pp. 128-33	Whilst the study is well described and data on the formulation and on the surfactant are presented, both test substances are not relevant to the EU renewal of the representative formulation MON52276, which does not contain POEA. Whilst the presented data for these two substances, are supported by the data presented in the paper, there is insufficient information presented to conclude on the assay conducted with the IPA salt of glyphosate. There are no specific biological results presented for anurans exposed to the glyphosate IPA exposure salt in this paper, the finding for the IPA salt can only be considered in a supportive way. All data presented for MON 2139 and MON 0818 are not relevant to the EU level risk assessment of glyphosate for Annex I renewal.
939	Ecotoxicology	Moreira L. F. et al.	2019	Modulation of the multixenobiotic resistance mechanism in <i>Danio rerio</i> hepatocyte culture (ZF-L) after exposure to glyphosate and Roundup (R).	Chemosphere (2019), Vol. 228, pp. 159-165	Epigenetic biomarkers are indicators of the presence of a chemical or mixture of chemicals in the environment. They are not indicators of toxicity. The endpoints presented are not relatable to the ecotoxicological risk assessment required for Annex I renewal in the EU.
940	Ecotoxicology	Morgan M. A. et al.	2019	Evaluating sub-lethal stress from Roundup (R) exposure in <i>Artemia franciscana</i> using H-1 NMR and GC-MS.	Aquatic Toxicology (2019), Vol. 212, pp. 77-87	Formulation used contains POEA - not relevant therefore to EU renewal.
941	Ecotoxicology	Morris A. et al.	2016	Effect of two commercial herbicides on life history traits of a human disease vector, <i>Aedes aegypti</i> , in the laboratory setting.	Ecotoxicology (2016), Vol. 25, No. 5, pp. 863-70	No relevant information on metabolism / residues / background levels of glyphosate. Epidemiology, effect of glyphosate on <i>Aedes aegypti</i> .
942	Ecotoxicology	Mottier A. et al.	2015	Effects of subchronic exposure to glyphosate in juvenile oysters (<i>Crassostrea gigas</i>): From molecular to individual levels.	Marine pollution bulletin (2015), Vol. 95, No. 2, pp. 665-77	Endpoints based on gene expressions are not considered in an ecotoxicology risk assessment for Annex I renewal.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
943	Ecotoxicology	Mugni H. et al.	2014	Acute toxicity of roundup to the nontarget organism <i>Hyalella curvispina</i> . Laboratory and field study	Toxicological and environmental chemistry (2014), Vol. 96, No. 7, pp. 1054-1063	Not the representative formulation for the Annex I therefore not relevant to the risk assessment for Annex I renewal.
944	Ecotoxicology	Munoz L. M. H. et al.	2015	Toxicity assessment of two agrochemicals, roundup active and cosmo-Flux411F, to colombian anuran tadpoles	Acta Biologica Colombiana (2015), Vol. 20, No. 2, pp. 153-161	Roundup Active is based on the potassium salt of glyphosate and contains a different surfactant system compared with the representative formulation for the Annex I EU renewal. It is therefore not relevant to the ecotoxicology risk assessment as effects cannot be related to the representative formulation.
945	Ecotoxicology	Murugan K. et al.	2014	<i>Eudrilus eugeniae</i> - a potent bioremediator in controlling herbicide and pesticide pollution.	International Journal of Pharmaceutical and Biological Archives (2014), Vol. 5, No. 5, pp. 67-74	Paper discusses the use of earthworm as bioremediation organisms to remove glyphosate from the soil. The endpoints presented are not relevant to an EU level risk assessment for Annex I renewal.
946	Ecotoxicology	Murussi C. R. et al.	2016	Exposure to different glyphosate formulations on the oxidative and histological status of <i>Rhamdia quelen</i> .	Fish physiology and biochemistry (2016), Vol. 42, No. 2, pp. 445-55	Findings cannot be related to an EU level ecotoxicology risk assessment
947	Ecotoxicology	Mysore D. K. et al.	2013	Effect of metabolic inhibitors on growth and carotenoid production in <i>Dunaliella bardawil</i> .	Journal of food science and technology (2013), Vol. 50, No. 6, pp. 1130-6	Formulation tested contains tallow amine surfactant - not relevant to EU renewal.
948	Ecotoxicology	Nascentes R. F. et al.	2018	Low doses of glyphosate enhance growth, CO ₂ assimilation, stomatal conductance and transpiration in sugarcane and eucalyptus.	Pest management science (2018), Vol. 74, No. 5, pp. 1197-1205	This paper discusses hormetic responses of sugar cane and eucalyptus plants following exposure to low doses of glyphosate. The exposure situation and the presented endpoint data are not relevant to the EU level renewal of glyphosate.
949	Ecotoxicology	Navarro C. D. C. et al.	2014	Effects of the surfactant polyoxyethylene amine (POEA) on genotoxic, biochemical and physiological parameters of the freshwater teleost <i>Prochilodus lineatus</i> .	Comparative biochemistry and physiology. Toxicology & pharmacology (2014), Vol. 165, pp. 83-90	Contains POEA, therefore not relevant to EU renewal.
950	Ecotoxicology	Niemeyer J. C. et al.	2018	Do recommended doses of glyphosate-based herbicides affect soil invertebrates? Field and laboratory screening tests to risk assessment.	Chemosphere (2018), Vol. 198, pp. 154-160	The study is considered not relevant as it is conducted with Roundup Original. Despite the content being 360 g a.e./L, this product in Brazil is based on MON 78087, which contains MON 0818 which is a surfactant system containing POEA. This is not a relevant surfactant for the Annex I submission and therefore data generated using this formulation is not relevant to the EU Annex I renewal process from an ecotoxicology perspective.
951	Ecotoxicology	Nocelli R. C. F. et al.	2019	EFFECTS OF HERBICIDES ON THE SURVIVAL OF THE BRAZILIAN NATIVE BEE <i>Melipona scutellaris</i> LATREILLE, 1811 (HYMENOPTERA: APIDAE)	PLANTA DANINHA (2019), Vol. 37, pp. 1	End-points based on LT50 (time until 50% lethality, are not considered in an EU level bee risk assessment. Exposure scenario is not relevant to the risk assessment as bees were exposed for up to 45 days, being fed continuously and therefore not relevant to an exposure situation in the field.
952	Ecotoxicology	Nur Masirah M. Z. et al.	2013	Effects of selected herbicides on soil microbial populations in oil palm plantation of Malaysia: a microcosm experiment.	African Journal of Microbiology Research (2013), Vol. 7, No. 5, pp. 367-374	Non-EU monitoring study - not relevant to an EU level ecotoxicology risk assessment for Annex I renewal of glyphosate.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
953	Ecotoxicology	Nwani C. D. et al.	2013	Investigation on acute toxicity and behavioral changes in <i>Tilapia zillii</i> due to glyphosate-based herbicide, forceup.	JAPS, Journal of Animal and Plant Sciences (2013), Vol. 23, No. 3, pp. 888-892	The study was not conducted to GLP and a relevant guideline was not followed. The glyphosate formulation used in the study was Forceup and therefore the toxicity of the active substance to this fish species is unclear from this article. There was no rationale for the selection of exposure concentrations presented and no analytical verification of test concentrations was reported during the semi-static test procedure. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
954	Ecotoxicology	Nwani C. D. et al.	2010	Lethal concentration and toxicity stress of Carbosulfan, Glyphosate and Atrazine to freshwater air breathing fish <i>Channa punctatus</i> (Bloch).	International Aquatic Research (2010), Vol. 2, No. 2, pp. 105-111	Glyphosate products used to look at toxicity to Snakehead fish relevant to the Indian subcontinent. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU renewal
955	Ecotoxicology	Nweke C. O. et al.	2015	Prediction of phenolic compounds and formulated glyphosate toxicity in binary mixtures using <i>Rhizobium</i> species dehydrogenase activity.	Advances in Life Sciences (2015), Vol. 5, No. 2, pp. 27-38	Mixture study
956	Ecotoxicology	Oliveira Souza C. et al.	2014	Exopolysaccharides and abiotic stress tolerance in bacterial isolates from "sabria" nodules.	Revista Caatinga (2014), Vol. 27, No. 4, pp. 240-245	Paper discusses a novel approach of assessing abiotic stress tolerance in bacterial isolates. Achieved dataset is not relatable to an EU level risk assessment.
957	Ecotoxicology	Olszyk D. et al.	2010	Phytotoxicity assay for seed production using <i>Brassica rapa</i> L.	Integrated environmental assessment and management (2010), Vol. 6, No. 4, pp. 725-34	Development of an assay to look at impact of glyphosate (and other pesticides) on the seed production of plant species with a short life cycle. End-points cannot be used in the regulatory risk assessment of glyphosate.
958	Ecotoxicology	Olszyk D. et al.	2010	Potato (<i>Solanum tuberosum</i>) greenhouse tuber production as an assay for asexual reproduction effects from herbicides.	Environmental toxicology and chemistry (2010), Vol. 29, No. 1, pp. 111-21	Study to look at effect of glyphosate product (and other chemistry) on potato plants asexual reproduction to develop an assay. EC25 values generated for glyphosate and effect on fresh weight on potato tuber and shoot weight. Not relevant to the regulatory risk assessment of glyphosate renewal.
959	Ecotoxicology	Omran N. E. et al.	2016	The endocrine disruptor effect of the herbicides atrazine and glyphosate on <i>Biomphalaria alexandrina</i> snails.	Toxicology and industrial health (2016), Vol. 32, No. 4, pp. 656-65	Cellular level end-points are not relatable to an EU level ecotoxicology assessment for AIR 5.
960	Ecotoxicology	Orsted M. et al.	2015	A fluorescence-based hydrolytic enzyme activity assay for quantifying toxic effects of Roundup (R) to <i>Daphnia magna</i> .	Environmental Toxicology and Chemistry (2015), Vol. 34, No. 8, pp. 1841-1850	Describes a novel fluorescence technique that is not relevant to EU level ecotoxicology risk assessment for Annex I renewal.
961	Ecotoxicology	Orun I. et al.	2013	Effects of acute and chronic exposure to glyphosate on common carp (<i>Cyprinus carpio</i> L.) hematological parameters: the beneficial effect of propolis.	Fresenius Environmental Bulletin (2013), Vol. 22, No. 9, pp. 2504-2509	The article does not report results, which can be used for ecotoxicology risk assessment for Annex I renewal purposes. Contains cellular and molecular findings

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962	Ecotoxicology	Owaghoraye F. et al.	2020	Biochemical response and vermiremediation assessment of three earthworm species (<i>Alma millsoni</i> , <i>Eudrilus eugeniae</i> and <i>Libyodrilus violaceus</i>) in soil contaminated with a glyphosate-based herbicide.	Ecological Indicators (2020), Vol. 108, pp. 1056-78	Endpoints based on effects on enzymes levels in earthworms are not used in the EU level ecotoxicology risk assessment for renewal under Annex I. Concerning exposure, based on 83.2g a.i./m ² equivalent, the corresponding application rate per hectare is 832,000 g/ha, equal to 832 kg/ha. This rate far exceeds proposed EU application rate max of 2.16 kg/ha. Therefore findings are difficult to relate to an EU exposure scenario. The product used was also not the representative formulation proposed in the Annex I dossier.
963	Ecotoxicology	Luaces J. P. et al.	2017	Genotoxic effects of Roundup Full II (R) on lymphocytes of <i>Chaetophraetus villosus</i> (Xenarthra, Mammalia): In vitro studies.	PLoS One (2017), Vol. 12, No. 8, pp. Article No. e0182911	Cellular level endpoints cannot be related to the ecotoxicology Annex I renewal risk assessment.
964	Ecotoxicology	Pala A.	2019	The effect of a glyphosate-based herbicide on acetylcholinesterase (AChE) activity, oxidative stress, and antioxidant status in freshwater amphipod: <i>Gammarus pulex</i> (Crustacean).	Environmental science and pollution research international (2019), Vol. 26, No. 36, pp. 36869-36877	Roundup was used which contains POEA. This is not the representative formulation for the Annex I renewal.
965	Ecotoxicology	Panda N. et al.	2016	Herbicides impact on Fe and Mn reduction and dehydrogenase activity in an agricultural soil.	Journal of Crop and Weed (2016), Vol. 12, No. 3, pp. 142-149	Comparative effects on Fe and Mn transformation and dehydrogenase activity in soils are not endpoints used in the EU level ecotoxicology risk assessment for Annex I renewal.
966	Ecotoxicology	Patkowski M. et al.	2016	Response of soil phosphatases to glyphosate and its formulations - Roundup (laboratory conditions).	Plant, Soil and Environment (2016), Vol. 62, No. 6, pp. 286-292	Technical data cannot be related to an EU level Annex I ecotoxicology risk assessment. Formulations used contain POEA.
967	Ecotoxicology	Peel M. D. et al.	2013	Natural Glyphosate Tolerance in Saintfoin (<i>Onobrychis viciifolia</i>).	Crop Science (2013), Vol. 53, No. 5, pp. 2275-2282	Paper discusses tolerance to glyphosate a comparison with two plants types. Endpoints specific to EU level ecotoxicology risk assessment are not presented.
968	Ecotoxicology	Pereira J. L. et al.	2018	Effects of glyphosate on the non-target leaf beetle <i>Ceratomya arcuata</i> (Coleoptera: Chrysomelidae) in field and laboratory conditions.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2018), Vol. 53, No. 7, pp. 447-453	The work was based on populations associated with applications made to glyphosate resistant soybeans. Over the top applications to treated crops are not relevant to the Annex I GAP table. The formulation used was Roundup Original, which contains POEA and is not included in the representative formulation (MON 52276), therefore findings of the study based on a formulation containing POEA are not considered relevant to the EU level RA for Annex I purposes.
969	Ecotoxicology	Perez-Iglesias J. M. et al.	2016	Effects of glyphosate on hepatic tissue evaluating melanomacrophages and erythrocytes responses in neotropical anuran <i>Leptodactylus latinasus</i> .	Environmental science and pollution research international (2016), Vol. 23, No. 10, pp. 9852-61	Presents cellular and morphological level information that cannot be related to an EU level ecotoxicology risk assessment for Annex I renewal.
970	Ecotoxicology	Persch T. S. P. et al.	2018	Changes in intermediate metabolism and oxidative balance parameters in sexually matured three-barbeled catfishes exposed to herbicides from rice crops (Roundup®), Primol® and Facet®).	Environmental toxicology and pharmacology (2018), Vol. 58, pp. 170-179	Relates to snails being exposure to a formulation of glyphosate that is not the representative formulation at Annex I for the EU.

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971	Ecotoxicology	Pfleeger T. et al.	2014	Effects of single and multiple applications of glyphosate or aminopyralid on simple constructed plant communities.	Environmental toxicology and chemistry (2014), Vol. 33, No. 10, pp. 2368-78	This paper looks at response of plant communities following multiple application scenarios across multiple years. Endpoints in terms of plant volume are not related to and EU level Ecotoxicology risk assessment for Annex I renewal.
972	Ecotoxicology	Pfleeger T. et al.	2010	Comparing effects of low levels of herbicides on greenhouse- and field-grown potatoes (<i>Solanum tuberosum</i> L.), soybeans (<i>Glycine max</i> L.), and peas (<i>Pisum sativum</i> L.)	Environmental Toxicology and Chemistry (2010), Vol. 30, No. 2, pp. 455-468	Study to compare effects of glyphosate on greenhouse and field grown potatoes, soybean and peas to determine if greenhouse studies are protective of field conditions. Conducted by US EPA. EC25 values generated but as the paper is comparing effect in and outside the greenhouse, the data does not contribute to the regulatory risk assessment of the glyphosate renewal.
973	Ecotoxicology	Piola L. et al.	2013	Comparative toxicity of two glyphosate-based formulations to <i>Eisenia andrei</i> under laboratory conditions.	Chemosphere (2013), Vol. 91, No. 4, pp. 545-51	End-points not related to an EU level ecotoxicology risk assessment for Annex I renewal.
974	Ecotoxicology	Pizarro H. et al.	2016	Impact of multiple anthropogenic stressors on freshwater: how do glyphosate and the invasive mussel <i>Limnoperna fortunei</i> affect microbial communities and water quality?.	Ecotoxicology (2016), Vol. 25, No. 1, pp. 56-68	The paper looks at the synergistic effects of glyphosate and freshwater mussels on eutrophication in surface waters. Not related to an EU level ecotoxicology risk assessment for Annex I renewal.
975	Ecotoxicology	Pochron S. et al.	2019	Temperature and body mass drive earthworm (<i>Eisenia fetida</i>) sensitivity to a popular glyphosate-based herbicide	Applied soil ecology (2019), Vol. 139, pp. 32-39	Formulation used is not the representative formulation for the Annex I renewal.
976	Ecotoxicology	Poletta G. L. et al.	2017	Biomarkers of Environmental Contamination in Reptile Species: The Effect of Pesticide Formulations on Broad-snouted Caiman <i>Caiman latirostris</i> (Crocodylia, Alligatoridae).	Larramendy, ML [Editor]. (2017) pp. 467-517. Ecotoxicology and Genotoxicology: Non-Traditional Aquatic Models. Publisher: ROYAL SOC CHEMISTRY, ISSN: 1757-7179.	Cellular and molecular level findings cannot be related to an EU level ecotoxicology risk assessment, a book chapter.
977	Ecotoxicology	Polyakova N. N. et al.	2018	Effect of herbicides application on the soil biological activity in the tree nursery	Agrokimiya (2018), Vol. 12, pp. 35-41	The paper describes the use of buried linen to establish the activity of microorganisms in the soil during a 2 year monitoring period in a tree nursery. The observations cannot be related to an EU level risk assessment as they are based on visual inspection / qualitative assessment of the amount of apparent breakdown of the linen.
978	Ecotoxicology	de Oliveira Procopio S. et al.	2014	Toxicity of herbicides used in the sugarcane crop to diazotrophic bacterium <i>Herbaspirillum seropedicae</i> .	Semina: Ciencias Agrarias (2014), Vol. 35, No. 5, pp. 2383-2398	Paper discusses the impact of glyphosate on cell densities of soil bacteria tested in liquid culture and using novel assay approaches. The endpoints cannot be related to an EU level ecotoxicology risk assessment for renewal.
979	Ecotoxicology	Qin Y. et al.	2017	Toxic effects of glyphosate on diploid and triploid fin cell lines from <i>Misgurnus anguillicaudatus</i> .	Chemosphere (2017), Vol. 180, pp. 356-364	Cellular level endpoints cannot be related to the ecotoxicology Annex I renewal risk assessment.
980	Ecotoxicology	Reddy S. B. et al.	2018	Disturbances in reproduction and expression of steroidogenic enzymes in aquatic invertebrates exposed to components of the herbicide Roundup	Toxicology Research and Application (2018), Vol. 2, pp. 2397847318805276/1	Findings cannot be related to an EU level ecotoxicology risk assessment, as the methods used are not recognised at the EU level.

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981	Ecotoxicology	Reis L. A. C. et al.	2018	Leaf morphoanatomy and biochemical variation on coffee cultivars under drift simulation of glyphosate.	Planta Daninha (2018), Vol. 36, pp. E018143560	Findings not relatable to an EU level ecotoxicology risk assessment for product renewal in the EU.
982	Ecotoxicology	Reno U. et al.	2014	The impact of Eskoba, a glyphosate formulation, on the freshwater plankton community.	Water environment research (2014), Vol. 86, No. 12, pp. 2294-300	Overall the study was well described and conducted partially in accordance with OECD Guideline No. 201. The endpoints measured within the study included survival, age of reproduction, and fecundity. However, validity criteria on mortality was exceeded in the control organisms for several intervals. Analytical measurements were only performed on stock solution. Second part of the study was performed with native micro-crustacean species in Argentina. The test exposure history to the organisms was unknown as they were collected within the local environment. Finally, the glyphosate formulation Eskoba. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
983	Ecotoxicology	Reno U. et al.	2018	Effects of glyphosate formulations on the population dynamics of two freshwater cladoceran species.	Ecotoxicology (2018), Vol. 27, No. 7, pp. 784-793	Formulation used is not the representative formulation for the Annex I renewal.
984	Ecotoxicology	Reno U. et al.	2016	Water polluted with glyphosate formulations: effectiveness of a decontamination process using <i>Chlorella vulgaris</i> growing as bioindicator	Journal of applied phycology (2016), Vol. 28, No. 4, pp. 2279-2286	Study conducted using Roundup ultramax (AKA Mon 78784) that contains surfactants that are different to those used in MON 52276. Therefore findings cannot be related to the ecotoxicology assessment for Annex I renewal for MON 52276
985	Ecotoxicology	Rezende-Silva S. L. et al.	2019	<i>Pouteria torta</i> is a remarkable native plant for biomonitoring the glyphosate effects on Cerrado vegetation	Ecological indicators (2019), Vol. 102, pp. 497-506	Formulation not the representative formulation for the Annex I renewal. Enzymatic endpoints are not relevant to an EU level risk assessment
986	Ecotoxicology	Richard S. et al.	2014	Effect of a glyphosate-based herbicide on gene expressions of the cytokines interleukin-1 β and interleukin-10 and of heme oxygenase-1 in European sea bass, <i>Dicentrarchus labrax</i> L.	Bulletin of environmental contamination and toxicology (2014), Vol. 92, No. 3, pp. 294-9	End-points based on gene expression are not considered in the EU level Annex I ecotoxicology risk assessment for renewal.
987	Ecotoxicology	Robertson C.	2013	The Effects of the Glyphosate-based Herbicide WeatherMax RTM on Sexual Differentiation and Growth in the Wood Frog (<i>Lithobates sylvaticus</i>).	Masters Abstracts International (2013), Vol. 51, No. 06, pp. 171	The formulation used contains a surfactant system that is not relevant to the representative formulation being considered for the Annex I renewal in the EU.
988	Ecotoxicology	Rocha T. L. et al.	2015	Proteomic and histopathological response in the gills of <i>Poecilia reticulata</i> exposed to glyphosate-based herbicide.	Environmental toxicology and pharmacology (2015), Vol. 40, No. 1, pp. 175-86	Observed findings relate to a formulation that is not the representative formulation for the Annex I renewal in the EU.
989	Ecotoxicology	Rodriguez A. M. et al.	2018	Glyphosate Alters Aboveground Net Primary Production, Soil Organic Carbon and Nutrients in Pampean Grasslands (Argentina)	Rangeland ecology & management (2018), Vol. 71, No. 1, pp 119-125	This paper describes multi season monitoring of different habitats in Argentina, the findings of which cannot be related to an EU level risk assessment for Annex I renewal from an ecotoxicology perspective.

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990	Ecotoxicology	Rodriguez-Gil J. L. et al.	2017	Aquatic hazard assessment of MON 0818, a commercial mixture of alkylamine ethoxylates commonly used in glyphosate-containing herbicide formulations. Part 2: Roles of sediment, temperature, and capacity for recovery following a pulsed exposure.	Environmental toxicology and chemistry (2017), Vol. 36, No. 2, pp. 512-521	Contains POEA, therefore not relevant to EU renewal.
991	Ecotoxicology	Romano-Armada N. et al.	2019	Construction of a combined soil quality indicator to assess the effect of glyphosate application.	The Science of the total environment (2019), Vol. 682, pp. 639-649	Paper describes a new approach to establishing the quality of farmland soils by assessing multiple physical, chemical and biological quality factors of soils and attempting to classify these as being of high or low quality based on a known history of glyphosate or no glyphosate application. To this end, the paper does not describe endpoint data that can be related to an EU level Annex I submission.
992	Ecotoxicology	Rondon Neto R. M. et al.	2011	Phytotoxicity of Aspidosperma desmanthum under glyphosate drifting. Fitotoxicidade de peroba-mica (Aspidosperma desmanthum) submetidas a deriva de glyphosate.	Revista Brasileira de Herbicidas (2011), Vol. 10, No. 2, 103 p	The study looks at the toxicity of glyphosate on seedlings of a tree species that is native to South America, Mexico and West Indies. The test substance was Gliz 480 SL (IPA salt). Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
993	Ecotoxicology	Roy N. M. et al.	2016	Glyphosate induces neurotoxicity in zebrafish.	Environmental toxicology and pharmacology (2016), Vol. 42, pp. 45-54	Endpoint not used in EU level ecotoxicology risk assessment
994	Ecotoxicology	Ruiz-Toledo J. et al.	2014	Effect of the concentration of glyphosate present in body waters near transgenic soybean fields on the honeybee Apis mellifera, and the stingless bee Tetragonisca angustula. Efecto de la concentracion de glifosato presente en cuerpos de agua cercanos a ca	Acta Zoologica Mexicana (2014), Vol. 30, No. 2, pp. 408-413	Non-EU monitoring study. Extrapolation to EU difficult.
995	Ecotoxicology	Ruuskanen S. et al.	2020	Female Preference and Adverse Developmental Effects of Glyphosate-Based Herbicides on Ecologically Relevant Traits in Japanese Quails.	Environmental science & technology (2020), Vol. 54, No. 2, pp. 1128-1135	Formulation used is not the representative formulation for the Annex I renewal.
996	Ecotoxicology	Saba R. M. et al.	2018	Toxicological and biochemical investigation of certain herbicides on Culex pipiens L. (Diptera: Culicidae) mosquitoes under laboratory conditions	Advances in Natural and Applied Sciences (2018), Vol. 12, No. 2, pp. 6-12	Non-representative formulation (Herbazz 48% EC) was tested. Test organisms were field collected with no knowledge of prior exposure to chemicals. Important information is missing in the material and methods section. The preparation and application of the test solutions as well as the tested concentration range were not reported. The test item is not adequately specified. Although the herbicide formulation is given with a purity of 48 %, it is not clear whether the test concentrations refer to the product or to the active substance. Moreover, the active ingredient is given as glyphosate isopropylamine which should be formulated as a salt resulting in test concentrations as acid equivalents. In addition, the biological results of the test were not sufficiently stated. No

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
997	Ecotoxicology	Salbego J. et al.	2014	Glyphosate on digestive enzymes activity in piava (<i>Leporinus obtusidens</i>).	Ciencia Rural (2014), Vol. 44, No. 9, pp. 1603-1607	Study provides information on cellular/molecular level and is no ecotoxicological relevant study
998	Ecotoxicology	Salman J. M. et al.	2016	Effect of pesticide glyphosate on some biochemical features in cyanophyta algae <i>oscillatoria limnetica</i> .	International Journal of PharmTech Research (2016), Vol. 9, No. 8, pp. 355-365	Cellular and molecular level endpoints discussed that are not relevant to EU level ecotoxicology risk assessment.
999	Ecotoxicology	Salvio C. et al.	2016	Survival, Reproduction, Avoidance Behavior and Oxidative Stress Biomarkers in the Earthworm <i>Octolasion cyaneum</i> Exposed to Glyphosate.	Bulletin of environmental contamination and toxicology (2016), Vol. 96, No. 3, pp. 314-9	The earthworm were collected in field in Argentina and acclimatized for 2 weeks. Therefore, the organisms may have had exposure to other chemicals in the field. No information on the field history regarding application of pesticides is known. Analytical measurements of glyphosate were carried out in the short-term bioassay samples. While the test organisms, test design and procedure are well described and all information for the evaluation of the study is given, no endpoint considered relevant for use in risk assessment was determined. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
1000	Ecotoxicology	Samal S. et al.	2019	Setal anomalies in the tropical earthworms <i>Drawida willsi</i> and <i>Lampito mauritii</i> exposed to elevated concentrations of certain agrochemicals: An electron micrographic and molecular docking approach	Environmental technology & innovation (2019), Vol. 15, pp. 100391	Paper describes a electron microscopic approach for establishing effects of pesticides on setal in worms. The findings are not relatable to an EU level ecotoxicological risk assessment.
1001	Ecotoxicology	Samanta P. et al.	2014	Biochemical effects of glyphosate based herbicide, Excel Mera 71 on enzyme activities of acetylcholinesterase (AChE), lipid peroxidation (LPO), catalase (CAT), glutathione-S-transferase (GST) and protein content on teleostean fishes.	Ecotoxicology and environmental safety (2014), Vol. 107, pp. 120-5	Cellular level endpoints cannot be related to the ecotoxicology Annex I renewal risk assessment.
1002	Ecotoxicology	Samanta P. et al.	2014	Evaluation of metabolic enzymes in response to Excel Mera 71, a glyphosate-based herbicide, and recovery pattern in freshwater teleostean fishes.	BioMed research international (2014), Vol. 2014, pp. 425159	Cellular level end-points cannot be related to the ecotoxicology Annex I renewal risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1003	Ecotoxicology	Samanta P. et al.	2019	Assessment of adverse impacts of glyphosate-based herbicide, Excel Mera 71 by integrating multi-level biomarker responses in fishes	International Journal of Environmental Science and Technology (2019), Vol. 16, pp. 6291-6300	Molecular level endpoints, associated with biomarker responses are not part of the ecotoxicology risk assessment for fish for an Annex I renewal of a plant protection product in the EU. Observations are not related to the EU renewal of glyphosate. Not representative formulation.
1004	Ecotoxicology	Sanchez J. A. A. et al.	2017	Effects of Roundup formulations on biochemical biomarkers and male sperm quality of the livebearing <i>Jenynsia multidentata</i> .	Chemosphere (2017), Vol. 177, pp. 200-210	Formulations contain POEA and therefore not relevant to the EU level ecotoxicological risk assessment for Annex I renewal.
1005	Ecotoxicology	Sani A. et al.	2016	Acute toxicity of herbicide (glyphosate) in <i>Clarias gariepinus</i> juveniles.	Toxicology reports (2016), Vol. 3, pp. 513-515	No information on test substance and test design not recognised. Fish too big for use in study.
1006	Ecotoxicology	Santos S. A. et al.	2019	DIFFERENTIAL TOLERANCE OF CLONES OF <i>Eucalyptus grandis</i> EXPOSED TO DRIFT OF THE HERBICIDES CARFENTHAZONE-ETHYL AND GLYPHOSATE	PLANTA DANINHA (2019), Vol. 37	The study is considered not relevant as it is conducted with Roundup Original. Despite the content being 360 g a.e./L, this product in Brazil is based on MON 78087, which contains MON 0818 which is a surfactant system containing POEA. This is not a relevant surfactant for the Annex I submission and therefore data generated using this formulation is not relevant to the EU Annex I renewal process from an ecotoxicology perspective.
1007	Ecotoxicology	Santric L. et al.	2016	Effects of herbicides on growth and number of actinomycetes in soil and in vitro.	Pesticidi i Fitomedicina (2016), Vol. 31, No. 3/4, pp. 121-128	No endpoints presented that can be used in an EU level ecotoxicology risk assessment for Annex I renewal.
1008	Ecotoxicology	Santric L. et al.	2018	THE EFFECTS OF NICOSULFURON AND GLYPHOSATE ON MICROBIAL ACTIVITY OF DIFFERENT SOILS	PLANTA DANINHA (2018), Vol. 36	Measured parameters are not used in the EU level ecotoxicology assessment for Annex I renewal. It cannot be confirmed that the product studied was the representative formulation.
1009	Ecotoxicology	Saunders L. E. et al.	2013	Root-zone glyphosate exposure adversely affects two ditch species.	Biology (2013), Vol. 2, No. 4, pp. 1488-96	The author describes a formulation that is not the representative formulation for the Annex I.
1010	Ecotoxicology	Seguin A. et al.	2017	Sub-lethal effects of a glyphosate-based commercial formulation and adjuvants on juvenile oysters (<i>Crassostrea gigas</i>) exposed for 35 days.	Marine pollution bulletin (2017), Vol. 117, No. 1-2, pp. 348-358	Contains POEA, therefore not relevant to EU renewal.
1011	Ecotoxicology	Shaker B. K. et al.	2018	Effect of exposure to glyphosate pesticide, cadmium and chromium on biomass of algae (<i>Chlorococcum humicola</i> and <i>Chlorella vulgaris</i>) in polluted aqueous culture.	Indian Journal of Public Health Research and Development (2018), Vol. 9, No. 10, pp. 708-713	End-points are based on exposure to both glyphosate and metals and therefore is considered a mixture. Therefore not relevant to EU level risk assessment for glyphosate renewal.
1012	Ecotoxicology	Sharifi Y. et al.	2015	Biodegradation of glyphosate herbicide by <i>Salinicoccus</i> spp isolated from Qom Hoze-soltan lake, Iran	Environmental Health Engineering and Management Journal (2015), Vol. 2, No. 1, pp. 31-36	Paper discusses the potential use of a bacterial strain for biodegrading of glyphosate in a freshwater lake in Iran. Not relevant to the Annex I renewal process in the EU.
1013	Ecotoxicology	Sheehan N. et al.	2018	Glyphosate-containing herbicide impacts physical and behavioral changes during head regeneration in <i>Dugesia</i> (<i>Girardia</i>) <i>tigrina</i>	Bios (2018), Vol. 89, No. 1, pp. 14-22	Formulation used is not the representative formulation for the Annex I renewal.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1014	Ecotoxicology	Shimina V. S. et al.	2010	Effect of Herbicide Excel Mera-71 (Glyphosate) Treatment on Seed Germination and Early Seedling Growth of Black Gram (Vigna mungo, Hepper.) var. T-9.	Advances in Plant Sciences (2010), Vol. 23, No. 2, pp. 515-518	Conducted in India, GLY product used to look at the toxicity to germination, seedling growth in seedlings of black gram. Endpoint not relevant for the regulatory renewal of GLY.
1015	Ecotoxicology	Shiogiri N. S. et al.	2012	Acute exposure of a glyphosate-based herbicide affects the gills and liver of the Neotropical fish, Piractus mesopotamicus.	Environmental toxicology and pharmacology (2012), Vol. 34, No. 2, pp. 388-396	Formulations contain POEA and therefore not relevant to the EU level ecotoxicology risk assessment for Annex I renewal.
1016	Ecotoxicology	Sikorski L. et al.	2019	The effects of glyphosate-based herbicide formulations on Lemna minor, a non-target species	Aquatic Toxicology (2019), Vol. 209, pp. 70-80	Difficult to relate the findings to an EU level risk assessment for Annex I renewal as the study was conducted on a non-EU tree species.
1017	Ecotoxicology	Silveira T. et al.	2019	Roundup® Herbicide Decreases Quality Parameters of Spermatozoa of Silversides Odontesthes Humensis	Bulletin of Environmental Contamination and Toxicology (2019), Vol. 102, No. 1	Observations cannot be related to an ecotoxicology risk assessment for EU renewal of glyphosate.
1018	Ecotoxicology	Simoes T. et al.	2019	Fate and effects of two pesticide formulations in the invertebrate Folsomia candida using a natural agricultural soil.	The Science of the total environment (2019), Vol. 675, pp. 90-97	The formulation used (MONTANA) contains POEA which is not relevant to the EU level ecotoxicology risk assessment for Annex I renewal.
1019	Ecotoxicology	Simoes T. et al.	2018	An integrative omics approach to unravel toxicity mechanisms of environmental chemicals: effects of a formulated herbicide	Scientific Reports (2018), Vol. 8, No. 1, pp. 1-12	Study investigates the impact of a glyphosate formulation that contains POEA on Folsomia. This is not the formulated product for the renewal and POEA is no longer used in the EU.
1020	Ecotoxicology	Siroski P. A. et al.	2016	Immunotoxicity of commercial-mixed glyphosate in broad snouted caiman (Caiman latirostris).	Chemico-biological interactions (2016), Vol. 244, pp. 64-70	Monitoring endpoints not relevant to EU level ecotoxicology risk assessment
1021	Ecotoxicology	Siti Hanisah Zahuri et al.	2014	Toxicity testing of three commonly used herbicides on soil-dwelling ant (Family: Formicidae - Odontomachus similis).	Borneo Journal of Resource Science and Technology (2014), Vol. 4, No. 1, pp. 28-33	Review, secondary information.
1022	Ecotoxicology	Smedbol E. et al.	2018	Effects of low concentrations of glyphosate-based herbicide factor 540A® on an agricultural stream freshwater phytoplankton community	Chemosphere (2018), Vol. 192, pp. 133-141	Test substance not glyphosate or ismetabolites. Paper presented based on a formulation of glyphosate that is not the representative formulation being considered for the Annex I renewal.
1023	Ecotoxicology	Smedbol E. et al.	2017	Phytoplankton growth and PSII efficiency sensitivity to a glyphosate-based herbicide (Factor 540®).	Aquatic toxicology (2017), Vol. 192, pp. 265-273	Achieved end-points are not relatable to an EU level ecotoxicology risk assessment for Annex I renewal.
1024	Ecotoxicology	Smith C. M. et al.	2019	Developmental and epigenetic effects of Roundup and glyphosate exposure on Japanese medaka (Oryzias latipes).	Aquatic toxicology (2019), Vol. 210, pp. 215-226	Single application rates for glyphosate active substance considered. No specific endpoints presented that could be applied to an EU level ecotoxicology risk assessment for Annex I renewal.
1025	Ecotoxicology	Soloneski S. et al.	2016	Genotoxic effect of a binary mixture of dicamba- and glyphosate-based commercial herbicide formulations on Rhinella arenarum (Hensel, 1867) (Anura, Bufonidae) late-stage larvae.	Environmental science and pollution research international (2016), Vol. 23, No. 17, pp. 17811-21	Despite LC50 data being present that could inform on the risk assessment - the formulation used (Credit®) is based on MON 35085, which is a 360 g/L formulation containing MON 0818, which contains POEA. These findings are therefore not relevant to the EU renewal as MON 52276 does not contain POEA.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1026	Ecotoxicology	Sribanjam S. et al.	2018	Toxic effects of the herbicide glyphosate on enzymes activities and histopathological changes in gill and liver tissue of freshwater fish, Silver barb (<i>Barbonymus gonionotus</i>)	Bioscience Research (2018), Vol. 15, No. 2, pp. 1251-1260	Data presented cannot be related to an EU level ecotoxicology risk assessment for Annex I renewal purposes. Roundup contains POEA which is not present in the representative formulation for the renewal.
1027	Ecotoxicology	Stefanello Junior G. J. et al.	2011	Selectivity of herbicides registered for corn at the immature stages of <i>Trichogramma pretiosum</i> (Hymenoptera: Trichogrammatidae). Seletividade de herbicidas registrados para a cultura do milho aos estadios imaturos de <i>Trichogramma pretiosum</i> (Hymenoptera).	Planta Daninha (2011), Vol. 29, pp. 1069-1077	Test species was parasitoid <i>T. pretiosum</i> in different immature stages (egg-larva, pre-pupal and pupal stages). However, the test solutions were sprayed onto egg-cards containing the parasitised eggs. Therefore this is not an adequate route of exposure and thus not relevant for the risk assessment.
1028	Ecotoxicology	Stenoien C. et al.	2018	Monarchs in decline: a collateral landscape-level effect of modern agriculture. Special Section: The impact of transgenic crops on protected arthropods.	Insect Science (2018), Vol. 25, No. 4, pp. 528-541	Concerns a review of the decline of monarch butterflies in the US. Not related to an EU level assessment for Annex I renewal.
1029	Ecotoxicology	Sulukan E. et al.	2017	An approach to clarify the effect mechanism of glyphosate on body malformations during embryonic development of zebrafish (<i>Danio rerio</i>).	Chemosphere (2017), Vol. 180, pp. 77-85	Endpoints are not related to an EU level risk assessment for Annex I renewal.
1030	Ecotoxicology	Sun K.-F. et al.	2013	Ecological risks assessment of organophosphorus pesticides based on response of <i>Scenedesmus quadricauda</i> .	China Environmental Science (2013), Vol. 33, No. 5, pp. 868-873	Endpoints not relevant to an EU level ecotoxicology risk assessment as they are not reliable.
1031	Ecotoxicology	Sun K.-F. et al.	2013	Ecological risks assessment of organophosphorus pesticides on bloom of <i>Microcystis wesenbergii</i>	International biodeterioration & biodegradation (2013), Vol. 77, pp. 98-105	Endpoints measured are not relevant or related to an EU level Annex I ecotoxicological risk assessment.
1032	Ecotoxicology	Sushilkumar et al.	2017	Herbicides effect on fish mortality and water quality in relation to chemical control of alligator weed.	Indian Journal of Weed Science (2017), Vol. 49, No. 4, pp. 396-400	Methods and end-points not related to EU level ecotoxicology assessment for renewal purposes.
1033	Ecotoxicology	Sushilkumar et al.	2017	Chemical control of duck weed and its effect on water quality and residue.	Indian Journal of Weed Science (2017), Vol. 49, No. 1, pp. 105-107	Difficult to relate observed findings to an EU level risk assessment for Annex I renewal.
1034	Ecotoxicology	Tang Y. et al.	2014	The influence of three different types of herbicides on biodiversity	Advanced Materials Research (2014), Vol. 838-841, pp. 2417-2426	Information presented is not directly relevant to the ecotoxicology risk assessment for Annex I renewal
1035	Ecotoxicology	Tapkir S. D. et al.	2019	Impact, recovery and carryover effect of Roundup® on predator recognition in common spiny loach, <i>Lepidocephalichthys thermalis</i> .	Ecotoxicology (2019), Vol. 28, No. 2, pp. 189-200	The formulation is not the representative formulation being used for the Annex I. Its identity cannot be confirmed. The observed effects based on reactions to non-specific alarms / cues cannot be related to an EU level ecotoxicology risk assessment for Annex I renewal.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1036	Ecotoxicology	Tkaczuk C. et al.	2016	The influence of selected pesticides on the growth of entomopathogenic fungi from the entomophthoralean order (Entomophthorales). Wpływ wybranych środków ochrony roślin na wzrost grzybow owadobójczych z rzędu owadomorkowców (Entomophthorales).	Annales Universitatis Mariae Curie-Skłodowska. Sectio E, Agricultura (2016), Vol. 71, No. 1, pp. 65-75	Test design not relevant to an EU level ecotoxicology risk assessment to support Annex I renewal.
1037	Ecotoxicology	Topal A. et al.	2015	Effects of glyphosate on juvenile rainbow trout (<i>Oncorhynchus mykiss</i>): transcriptional and enzymatic analyses of antioxidant defence system, histopathological liver damage and swimming performance.	Ecotoxicology and environmental safety (2015), Vol. 111, pp. 206-14	Cellular and molecular level results, not considered relevant to EU level ecotoxicology risk assessment.
1038	Ecotoxicology	Triana Velasquez T. M. et al.	2013	Lethal and Sublethal Effects of Glyphosate (Roundup (R) Active) to Embryos of Colombian Anurans. Original Title: EFECTOS LETALES Y SUBLETALES DEL GLIFOSATO (ROUNDUP (R) ACTIVO) EN EMBRIONES DE ANUROS COLOMBIANOS.	Acta Biologica Colombiana (2013), Vol. 18, No. 2, pp. 271-278	The formulation data presented in the paper are for a formulation that is not the representative formulation for the Annex I renewal.
1039	Ecotoxicology	Udeh G. N. et al.	2014	Acute toxicity of Delsate® herbicide (glyphosate) on albumin and blood urea nitrogen of African catfish, <i>Clarias gariepinus</i> (Burchell, 1822).	Journal of Aquatic Sciences (2014), Vol. 29, No. 2, pp. 309-315	Test item is a formulation other than the representative formulation.
1040	Ecotoxicology	Udeh G. N. et al.	2014	Behavioural and some physico-chemical assessment of fresh water catfish <i>Clarias gariepinus</i> (Burchell, 1822) exposed to acute concentrations of Delsate® herbicide (glyphosate).	Journal of Aquatic Sciences (2014), Vol. 29, No. 2, pp. 275-283	Contains a surfactant system that is not relevant to the EU level ecotoxicology risk assessment for renewal of MON 52276 onto Annex I.
1041	Ecotoxicology	Ujszegi J. et al.	2015	No observable effect of a glyphosate-based herbicide on two top predators of temporal water bodies.	Environmental toxicology and chemistry (2015), Vol. 34, No. 2, pp. 307-13	The test substance contains polyethoxylated tallowamine surfactant, which is not allowed in herbicidal formulations in the EU. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.
1042	Ecotoxicology	Ujszegi J. et al.	2016	NO EFFECT OF A GLYPHOSATE-BASED HERBICIDE ON LARVAL DRAGONFLIES (AESHNA CYANEA) AND ADULT NEWTS (LISSOTRITON VULGARIS) IN A LABORATORY-BASED EXPERIMENT.	Acta Zoologica Academiae Scientiarum Hungaricae (2016), Vol. 62, No. 4, pp. 355-367	The test substance contains polyethoxylated tallowamine surfactant, which is not allowed in herbicidal formulations in the EU. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1043	Ecotoxicology	Vajargah M. F. et al.	2018	Acute toxicity effect of glyphosate on survival rate of common carp, <i>Cyprinus carpio</i>	Environmental Health Engineering and Management Journal (2018), Vol. 5, No. 2, pp. 61-66	Non-representative formulation (Glyphosate Aria 41% SL) was tested. The test conditions throughout the whole exposure period were not documented. No information on source and composition of test media reported. There was no analytical verification of test concentrations reported and the study is not conducted according to a recognised test guideline. No validity criteria are stated so the validity of the study cannot be confirmed. The size of the fish used in the test results in a fish loading rate of 1.23 g fish/Litre, which exceeds the loading rate required by internationally recognised fish testing guidelines. The testing design is not properly described i.e. whether a static, static renewal or flow through test design was used. The water quality parameters measured would suggest that the environmental conditions were maintained for the exposure duration, although this can also not be confirmed from the information presented. The water temperature being maintained at 26±1 °C, exceeds the upper temperature limit for testing with <i>Cyprinus carpio</i> (24 °C).
1044	Ecotoxicology	Vannini A. et al.	2016	Bioaccumulation, physiological and ultrastructural effects of glyphosate in the lichen <i>Xanthoria parietina</i> (L.) Th. Fr.	Chemosphere (2016), Vol. 164, pp. 233-240	Article discusses the use of lichens as a bioindicator model of glyphosate exposure. Not relevant to an EU level ecotoxicology risk assessment for the renewal of Glyphosate onto Annex I in the EU.
1045	Ecotoxicology	Veeraiah K. et al.	2015	Impact of glyphosate on biochemical constituents of the freshwater fish, <i>catla catla</i>	International Journal of Bioassays (2015), Vol. 4, No. 7, pp. 4139-4144	Formulation is not the representative formulation for the Annex I renewal.
1046	Ecotoxicology	Vera M. S. et al.	2012	Direct and indirect effects of the glyphosate formulation Glifosato Atanor® on freshwater microbial communities.	Ecotoxicology (2012), Vol. 21, No. 7, pp. 1805-16	On review of the paper, the findings of the study conducted in Argentina were difficult to relate to the EU level ecotoxicology risk assessment. The formulation used differs to the representative formulation for the Annex I in the EU.
1047	Ecotoxicology	Vera-Candioti J. et al.	2013	Evaluation of the genotoxic and cytotoxic effects of glyphosate-based herbicides in the ten spotted live-bearer fish <i>Cnesterodon decemmaculatus</i> (Jenyns, 1842).	Ecotoxicology and environmental safety (2013), Vol. 89, pp. 166-73	Formulations used are not relevant to the Annex I renewal of glyphosate in the EU.
1048	Ecotoxicology	Verderame M. et al.	2019	How Glyphosate Impairs Liver Condition in the Field Lizard <i>Podarcis siculus</i> (Rafinesque-Schmaltz, 1810): Histological and Molecular Evidence.	BioMed research international (2019), Vol. 2019, pp. 4746283	Sub-lethal endpoints based on blood chemistry analysis are not relevant to an EU level Annex I risk assessments.
1049	Ecotoxicology	Viti M. L. et al.	2019	Translocation and Root Exudation of Glyphosate by <i>Urochloa brizantha</i> and its Transport on Sugarcane and Citrus Seedlings	Planta Daninha (2019), Vol. 37	Paper discusses the translocation potential of glyphosate via the root zone, after application to palisade grass planted in association with sugar-cane. No endpoints relevant for an EU level ecotoxicology assessment.
1050	Ecotoxicology	Vllasaku I. et al.	2018	Investigation of genotoxic effect of herbicide Randap 480 ec at goldfish (<i>Carassius auratus</i>)	International Journal of Pharmaceutical Sciences Review and Research (2018), Vol. 48, No. 1, pp. 7/1-7/3	Identity of the formulated product used is not the same as the representative formulation being considered for the Annex I.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1051	Ecotoxicology	Voerces M. et al.	2019	Influence of agro-environmental pollutants on a biocontrol strain of <i>Bacillus velezensis</i>	MicrobiologyOpen (2019), Vol. 8, No. 3, pp. e660	This paper discusses the impact of glyphosate on pesticide resistance strains of biocontrol agents. This is not considered relevant to an EU level ecotoxicology risk assessment for EU Annex I renewal.
1052	Ecotoxicology	Vrisman C. M. et al.	2014	Influence of herbicides and fungicides in the carpogenic germination of <i>Sclerotinia sclerotiorum</i> (Lib.) de Bary. Influencia de herbicidas e fungicidas na germinação carpogénica de esclerodios de <i>Sclerotinia sclerotiorum</i> (Lib.) de Bary.	Bioscience Journal (2014), Vol. 30, No. 2, pp. 477-483	Study describes the impact of multiple pesticides on the germination of <i>Sclerotinia sclerotiorum</i> - a soil fungus. The endpoints are not useable in an EU level Annex ecotox risk assessment. 400 L/ha (if this were the representative formulation) would be equivalent to 1440 kg/ha significantly higher than any application rate proposed. Therefore this is not relatable to EU level ecotoxicology risk assessment.
1053	Ecotoxicology	Wagner N. et al.	2013	Effects of water contamination on site selection by amphibians: experiences from an arena approach with European frogs and newts.	Archives of environmental contamination and toxicology (2013), Vol. 65, No. 1, pp. 98-104	Novel choice / avoidance end-point data are not considered as part of an EU level ecotoxicology risk assessment for Annex I renewal.
1054	Ecotoxicology	Wagner N. et al.	2017	Population and life-stage-specific effects of two herbicide formulations on the aquatic development of European common frogs (<i>Rana temporaria</i>).	Environmental toxicology and chemistry (2017), Vol. 36, No. 1, pp. 190-200	The study was not conducted according to GLP, but it is well documented and in accordance with an ASTM standard protocol. The authors state that in all 3 breeding ponds, glyphosate was detected but not aminomethylphosphonic. However, the non-EU representative glyphosate formulation, Roundup® UltraMax, was tested. Therefore the study only provides supportive information.
1055	Ecotoxicology	Wagner N. et al.	2017	Effects of a commonly used glyphosate-based herbicide formulation on early developmental stages of two anuran species.	Environmental science and pollution research international (2017), Vol. 24, No. 2, pp. 1495-1508	Not the representative formulation for the Annex I renewal. Therefore not relevant to EU renewal.
1056	Ecotoxicology	Wagner N. et al.	2017	Corrigendum [Erratum to document cited in CA166:057881]	Environmental Toxicology and Chemistry (2017), Vol. 36, No. 1, pp. 276	This is a corrigendum for an article (No. 2248), which is classified as non-relevant.
1057	Ecotoxicology	Wang F. et al.	2014	Acute Toxicity and Oxidative Stress of Two Herbicides on Earthworm <i>Eisenia fetida</i> .	Asian Journal of Ecotoxicology (2014), Vol. 9, No. 6, pp. 1210-1218	The achieved acute end-points are not considered relevant to an EU level ecotox risk assessment for renewal purposes.
1058	Ecotoxicology	Wang Y. et al.	2013	Joint Toxicity of Arsenic, Glyphosate and Dichlorvos to <i>C. elegans</i> .	Asian Journal of Ecotoxicology (2013), Vol. 8, No. 2, pp. 262-267	Mixture study with arsenic.
1059	Ecotoxicology	Wang Y. et al.	2014	Toxicological effects of glyphosate to <i>Pyramidomonas delicatula</i> and <i>Alexandrium tamarense</i> in water environment	Nongyao (2014), Vol. 53, No. 1, pp. 45-48	End-points are not relatable to an EU level Annex I ecotoxicology risk assessment.
1060	Ecotoxicology	Wang Y. et al.	2012	Acute Toxicity of Twenty-Two Commonly Used Herbicides to Earthworm (<i>Eisenia fetida</i>).	Asian Journal of Ecotoxicology (2012), Vol. 7, No. 3, pp. 317-325	The achieved acute endpoints are not considered relevant to an EU level ecotoxicology risk assessment for renewal purposes.
1061	Ecotoxicology	Watts C. et al.	2016	Responses of invertebrates to herbicide in <i>Salix cinerea</i> invaded wetlands: Restoration implications	Ecological management & restoration (2016), Vol. 17, No. 3, pp. 243-249	Non-EU monitoring study. Extrapolation to EU is difficult.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1062	Ecotoxicology	Webster T. M. U. et al.	2015	Global transcriptomic profiling demonstrates induction of oxidative stress and of compensatory cellular stress responses in brown trout exposed to glyphosate and Roundup.	BMC Genomics (2015), Vol. 16, No. 32	No data relevant to the EU data requirements is presented and therefore does not support the EU level renewal of glyphosate.
1063	Ecotoxicology	Weech I. et al.	2018	The effect of willow control using a glyphosate formulation on aquatic invertebrates within a New Zealand wetland	New Zealand journal of marine and freshwater research (2018), Vol. 52, No. 1, pp. 16-41	Multi-year environmental monitoring project conducted in New Zealand. Not relevant to EU level risk assessment.
1064	Ecotoxicology	Weeks Santos S. et al.	2019	A glyphosate-based herbicide induces sub-lethal effects in early life stages and liver cell line of rainbow trout, <i>Oncorhynchus mykiss</i> .	Aquatic toxicology (2019), Vol. 216, pp. 105291	Non-standard test design and results that cannot be related to an EU level risk assessment for EU renewal purposes.
1065	Ecotoxicology	Wrinm K. M. et al.	2012	Predator cues and an herbicide affect activity and emigration in an agrobiont wolf spider.	Chemosphere (2012), Vol. 87, No. 4, pp. 390-6	Discusses results of experiments conducted using a formulation of glyphosate that contains POEA. Not relevant to EU risk assessment.
1066	Ecotoxicology	Wu L. et al.	2016	Physiological effects of the herbicide glyphosate on the cyanobacterium <i>Microcystis aeruginosa</i> .	Aquatic toxicology (2016), Vol. 178, pp. 72-9	End-points presented cannot be used in the EU level renewal risk assessment for glyphosate from an ecotoxicology perspective.
1067	Ecotoxicology	Yadav S. S. et al.	2013	Toxic and genotoxic effects of Roundup on tadpoles of the Indian skittering frog (<i>Euflectis cyanophlyctis</i>) in the presence and absence of predator stress.	Aquatic toxicology (2013), Vol. 132-133, pp. 1-8	The Roundup formulation tested contains POEA, therefore not relevant to the EU level Annex I renewal from an ecotoxicology perspective.
1068	Ecotoxicology	Yang Z. et al.	2018	Toxic effects of four commonly-used agrochemicals on <i>Arma chinensis</i> and <i>Pteronemus lewisi</i> .	Agricultural Biotechnology (2018), Vol. 7, No. 5, pp. 153-155, 158	Test item is a glyphosate formulation that is not the representative formulation for the Annex I renewal.
1069	Ecotoxicology	Ye J. et al.	2019	The Growth, Apoptosis and Oxidative Stress in <i>Microcystis viridis</i> Exposed to Glyphosate.	Bulletin of environmental contamination and toxicology (2019), Vol. 103, No. 4, pp. 585-589	Achieved end-points are not releatable to an EU level ecotoxicology assessment for Annex I renewal.
1070	Ecotoxicology	Yousaf S. et al.	2013	Effect of Pesticides on the Soil Microbial Activity.	Pakistan Journal of Zoology 2013), Vol. 45, No. 4, pp. 1063-1067	Achieved end-points are not relevant to an EU level risk assessment. Novel test design with no positive control and cannot confirm dose.
1071	Ecotoxicology	Zabaloy M. C. et al.	2016	Soil ecotoxicity assessment of glyphosate use under field conditions: microbial activity and community structure of Eubacteria and ammonia-oxidising bacteria.	Pest management science (2016), Vol. 72, No. 4, pp. 684-91	Findings are not releatable to an EU level ecotoxicology risk assessment for Annex I renewal purposes.
1072	Ecotoxicology	Zabotkina E. A. et al.	2016	The changes of the immunocompetent cells ultrastructure in the kidney, spleen and liver in Amur sleeper <i>Perccottus glenii</i> at the influence of pesticide Roundup.	Trudy VNIRO (2016), Vol. 162, pp. 73-81	Article cannot be related to an EU level ecotoxicology risk assessment, as exposure levels cannot be confirmed and there are no end-points presented that could be used in an ecotoxicology assessment. The paper describes sub-lethal effects / morphological changes in the structure of mitochondria.
1073	Ecotoxicology	Zain N. M. M. et al.	2013	Growth-inhibitory Effects of Herbicides on Soil Bacterial Population in Oil Palm Plantation	Journal of Pure and Applied Microbiology (2013), Vol. 7, No. 3, pp. 1799-1808	Paper describes mixture toxicity on soil communities of four pesticides, therefore not relevant to single active substance formulation for EU renewal. onto Annex I

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1074	Ecotoxicology	Zaller J. G. et al.	2018	Herbicides in vineyards reduce grapevine root mycorrhization and alter soil microorganisms and the nutrient composition in grapevine roots, leaves, xylem sap and grape juice.	Environmental science and pollution research international (2018), Vol. 25, No. 23, pp. 23215-23226	Study conducted using a formulation that is not the representative formulation for the Annex I renewal.
1075	Ecotoxicology	Zaller J. G. et al.	2014	Glyphosate herbicide affects belowground interactions between earthworms and symbiotic mycorrhizal fungi in a model ecosystem.	Scientific reports (2014), Vol. 4, pp. 5634	Formulation used was Roundup which contains POEA, the latter that is not relevant in the EU.
1076	Ecotoxicology	Zantedeschi R. et al.	2018	Selectivity of pesticides registered for soybean crop on <i>Telenomus podisi</i> and <i>Trissolcus basalus</i> .	Pesquisa Agropecuaria Tropical (2018), Vol. 48, No. 1, pp. 52-58	Test substance identity and level of exposure cannot be confirmed by the details presented in the paper.
1077	Ecotoxicology	Zebal Y. D. et al.	2018	A glyphosate-based herbicide reduces fertility, embryonic upper thermal tolerance and alters embryonic diapause of the threatened annual fish <i>Austrolebias nigrofasciatus</i> .	Chemosphere (2018), Vol. 196, pp. 260-269	The paper relates to the product Transorb R and not the representative formulation for the Annex I renewal. The presented data are not considered relevant for use in risk assessment as they are single rates and not derived end-points.
1078	Ecotoxicology	Zhang M. et al.	2018	Effects of nitrification inhibitor and herbicides on nitrification, nitrite and nitrate consumptions and nitrous oxide emission in an Australian sugarcane soil	Biology and fertility of soils (2018), Vol. 54, No. 6, pp. 697-706	The paper describes the influence of a nitrification inhibitor on soil functional process when exposed to herbicides. This is a comparative assessment study that is difficult to relate to an Annex I ecotoxicology risk assessment.
1079	Ecotoxicology	Zhang Q. et al.	2016	Effects of glyphosate at environmentally relevant concentrations on the growth of and microcystin production by <i>Microcystis aeruginosa</i> .	Environmental monitoring and assessment (2016), Vol. 188, No. 11, pp. 632	This study presents cellular and molecular findings that are not relatable to the EU level ecotoxicology risk assessment for Annex I renewal.
1080	Ecotoxicology	Zhang Q. et al.	2015	Effects of glyphosate on <i>Microcystis aeruginosa</i> growth and related mechanisms	Anhui Nongye Kexue (2015), Vol. 43, No. 36, pp. 157-159	There are no end-points presented that could be used in an EU level ecotoxicology risk assessment.
1081	Ecotoxicology	Zhang Z. et al.	2016	Acute toxicity and risk assessment of paraquat aqueous solution and its 9 alternative products to <i>Bombyx mori</i>	Canye Kexue (2016), Vol. 42, No. 3, pp. 483-487	The dipping technique for leaf exposure is not a recognized EU approach for toxicity testing. Not relevant to an EU level / Annex I ecotoxicology risk assessment.
1082	Ecotoxicology	Zhao J. et al.	2013	Non-target effects of herbicides on soil nematode assemblages	Pest Management Science (2013), Vol. 69, No. 6, pp. 679-684	Paper discusses a soil nematode meta-analysis with no supported data presented. The resulting analysis cannot be related to an EU level Annex I risk assessment.
1083	Ecotoxicology	Zhelezova A. D. et al.	2018	STRUCTURAL AND FUNCTIONAL CHARACTERISTICS OF PROKARYOTIC COMPLEX OF SOD-PODZOLIC SOIL INFLUENCED BY HERBICIDE GLYPHOSATE	Vestnik Moskovskogo Universiteta Seriya 17 Pochvovedenie (2018), No. 2, pp. 48-54	This is a medium to long term soil bacteria monitoring study. There are no quantifiable end-points presented nor exposure levels defined that can be related to an EU level ecotoxicology risk assessment for renewal purposes. Despite glyphosate being mentioned in the title / abstract, there is no information about glyphosate (rates used / source / purity etc.) in the paper.

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1084	Ecotoxicology	Zhong G. et al.	2018	Responses of <i>Hydrilla verticillata</i> (L.f.) Royle and <i>Vallisneria spiralis</i> (Lour.) hara to glyphosate exposure	Chemosphere (2018), Vol. 193, pp. 385-393	The paper describes enzymatic levels in aquatic plants that cannot be related to an EU level risk assessment for EU renewal.
1085	Ecotoxicology	Zhou C. et al.	2014	Inhibition effect of glyphosate on the acute and subacute toxicity of cadmium to earthworm <i>Eisenia fetida</i> .	Environmental toxicology and chemistry (2014), Vol. 33, No. 10, pp. 2351-7	This paper looked at the impact of GBH in combination with cadmium in soil on earthworm toxicity. This study was a mixture assessment and thus not considered relevant for the Annex I renewal of a single a.i. containing the representative formulation for Annex I renewal.
1086	Ecotoxicology	Zhou C. et al.	2012	Does glyphosate impact on Cu uptake by, and toxicity to, the earthworm <i>Eisenia fetida</i> ?	Ecotoxicology (2012), Vol. 21, No. 8, pp. 2297-305	This paper looked at the impact of GBH in combination with copper in soil on earthworm toxicity. This study was a mixture assessment and thus not considered relevant for the Annex I renewal of a single a.i. containing the representative formulation for Annex I renewal.
1087	Ecotoxicology	Zhu X. et al.	2016	Herbicides interfere with antigrader defenses in <i>Scenedesmus obliquus</i> .	Chemosphere (2016), Vol. 162, pp. 243-51	This paper discusses sub-lethal impacts of glyphosate on colonising activity of <i>Scenedesmus</i> . The end-points are not releatable to the EU level ecotoxicology risk assessment for Annex I renewal.
1088	Ecotoxicology	Zhu Y. C. et al.	2017	Feeding toxicity and impact of imidacloprid formulation and mixtures with six representative pesticides at residue concentrations on honey bee physiology (<i>Apis mellifera</i>).	PLoS one (2017), Vol. 12, No. 6, pp. e0178421	This study summarises that there were no effects on bees from glyphosate exposure alone. When mixed with other pesticides, effects observed, but as this is based on mixtures, it is not relevant to EU level ecotoxicology risk assessment for single active containing formulation for Annex I renewal in the EU.
1089	Fate and behaviour in the environment	Adelowo F. E. et al.	2014	Biodegradation of Glyphosate by Fungi Species	Advances in Bioscience and Bioengineering (2014), Vol. 2, No. 1, pp. 104	Degradation of glyphosate by fungal isolates from Nigerian soil not relevant to EU risk assessment.
1090	Fate and behaviour in the environment	Ahmed S. et al.	2011	Influence of parameters on the heterogeneous photocatalytic degradation of pesticides and phenolic contaminants in wastewater: A short review.	Journal of Environmental Management (2011), Vol. 92, No. 3, pp. 311-330	This paper is a literature review with no experimental data provided. Investigation of specific methods of wastewater treatment are also not relevant to the data requirements
1091	Fate and behaviour in the environment	Allinson G. et al.	2016	Pesticide and trace metals in surface waters and sediments of rivers entering the Corner Inlet Marine National Park, Victoria, Australia.	Environmental science and pollution research international (2016), Vol. 23, No. 6, pp. 5881-91	No glyphosate analysis included in paper.
1092	Fate and behaviour in the environment	Alza-Camacho W. R. et al.	2016	Voltammetric quantification of Paraquat and glyphosate in surface waters. Determinación voltamétrica de paraquat y glifosato en aguas superficiales.	Revista Corporica - Ciencia y Tecnología Agropecuarias (2016), Vol. 17, No. 3, pp. 331-345	Primarily a methods paper. Includes analysis of 10 water samples from Colombia but only minimal details on collection of samples provided.
1093	Fate and behaviour in the environment	Anon.	2016	Reply to: Comments on the paper: Re-evaluation of groundwater monitoring data for glyphosate and bentazone by taking detection limits into account	Science of the Total Environment (2016), Vol. 557-558, pp. 916	No new data presented, just discussion of statistical methods for re-evaluation.

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1094	Fate and behaviour in the environment	Aparicio V. C. et al.	2013	Environmental fate of glyphosate and aminomethylphosphonic acid in surface waters and soil of agricultural basins.	Chemosphere (2013), Vol. 93, No. 9, pp. 1866-73	Analysis of soil and surface water samples related to cultivation of transgenic crops in Argentina are not representative for European agricultural practice.
1095	Fate and behaviour in the environment	Arroyave J. M. et al.	2017	Desorption rate of glyphosate from goethite as affected by different entering ligands: hints on the desorption mechanism.	Environmental Chemistry (2017), Vol. 14, No. 5, pp. 288-294	Desorption of glyphosate from goethite is studied relative to other competing ligands. Provides useful information on glyphosate desorption factors but not relevant to risk assessment.
1096	Fate and behaviour in the environment	Babic S. et al.	2018	Assessment of river sediment toxicity: Combining empirical zebrafish embryotoxicity testing with in silico toxicity characterization.	The Science of the total environment (2018), Vol. 643, pp. 435-450	Toxicity of sediments containing mixtures of chemicals are discussed.
1097	Fate and behaviour in the environment	Baez M. E. et al.	2015	Sorption-desorption behavior of pesticides and their degradation products in volcanic and nonvolcanic soils: interpretation of interactions through two-way principal component analysis	Environmental science and pollution research international (2015), Vol. 22, No. 11, pp. 8576-85	Adsorption/ desorption studies done on a mixture of glyphosate and AMPA. Not relevant for EU risk assessment.
1098	Fate and behaviour in the environment	Baez M. E. et al.	2014	Determination of glyphosate and aminomethylphosphonic acid in aqueous soil matrices: a critical analysis of the 9-fluorenylmethyl chloroformate derivatization reaction and application to adsorption studies.	Journal of separation science (2014), Vol. 37, No. 21, pp. 3125-32	Adsorption/ desorption studies done on a mixture of glyphosate and AMPA. Not relevant for EU risk assessment.
1099	Fate and behaviour in the environment	Battaglin W. A. et al.	2014	Glyphosate and its degradation product AMPA occur frequently and widely in U.S. soils, surface water, groundwater, and precipitation. Special Issue: Contaminants of emerging concern II.	Journal of the American Water Resources Association (2014), Vol. 50, No. 2, pp. 275-290	Analysis of soil, groundwater, surface water and sediment samples from USA are not representative for European agricultural practice.
1100	Fate and behaviour in the environment	Bento C. P. M. et al.	2018	Spatial glyphosate and AMPA redistribution on the soil surface driven by sediment transport processes - A flume experiment	Environmental pollution (2018), Vol. 234, pp. 1011-1020	Artificial run-off situation not relevant for risk assessment.
1101	Fate and behaviour in the environment	Berzins A. et al.	2019	Modeling the mobility of glyphosate from two contrasting agricultural soils in laboratory column experiments	Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes (2019), Vol. 54, No. 7, pp. 539-548	Study of glyphosate degradation in Latvian sandy and loamy sand soils +/- augmentation with endophytic bacteria and fungi isolated from oilseed rape and barley followed by column leaching of same soils. Method not relevant for EU risk assessment.
1102	Fate and behaviour in the environment	Bois P. et al.	2013	Herbicide mitigation in microcosms simulating stormwater basins subject to polluted water inputs.	Water research (2013), Vol. 47, No. 3, pp. 1123-35	Glyphosate concentrations in the microcosm system were 1000-fold higher than typical concentrations. Glyphosate degradation results not relevant for risk assessment.

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1103	Fate and behaviour in the environment	Bois P. et al.	2011	Herbicide degradation and copper complexation by bacterial mixed cultures from a vineyard stormwater basin.	Journal of Soils and Sediments (2011), Vol. 11, No. 5, pp. 860-873	Cultivation and analysis of bacterial communities as well as analysis of glyphosate in the respective culture supernatants are not relevant to the data requirements.
1104	Fate and behaviour in the environment	Bonansea R. I. et al.	2018	The Fate of Glyphosate and AMPA in a Freshwater Endorheic Basin: An Ecotoxicological Risk Assessment.	Toxics (2017), Vol. 6, No. 3, pp. 1	Paper reports concentrations of glyphosate & AMPA in water, sediment and suspended particulate matter in a river in Argentina. No information on product use provided. Not relevant to EU risk assessment.
1105	Fate and behaviour in the environment	Bonfleur E. J. et al.	2011	Mineralization and degradation of glyphosate and atrazine applied in combination in a Brazilian Oxisol.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2011), Vol. 46, No. 1, pp. 69-75	Laboratory soil degradation experiments with Brazilian soils are not representative for European conditions.
1106	Fate and behaviour in the environment	Botero-Coy A. M. et al.	2013	Improvements in the analytical methodology for the residue determination of the herbicide glyphosate in soils by liquid chromatography coupled to mass spectrometry.	Journal of chromatography. A (2013), Vol. 1292, pp. 132-41	Primarily a methods paper. Includes analysis of 26 soil samples from Colombia and Argentina but no details on source or collection of samples provided.
1107	Fate and behaviour in the environment	Boz B. et al.	2015	Analysis of suspended solids and Glyphosate and efficacy of the cross-compliance standard 5.2 'buffer strips' in the protection of superficial water from suspended solids in runoff conveyed through a vineyard. Special Issue: Cross compliance. Results of t	Italian Journal of Agronomy (2015), Vol. 10, No. s.l, 701 p	The effectiveness of vegetated buffer to prevent glyphosate runoff events was investigated but the concentration of glyphosate from the vineyard runoff were all below the detection limit therefore it was not possible to evaluate the efficiency of the buffer zone in removing glyphosate.
1108	Fate and behaviour in the environment	Bradley P. M. et al.	2018	Reconnaissance of Mixed Organic and Inorganic Chemicals in Private and Public Supply Tapwaters at Selected Residential and Workplace Sites in the United States.	Environmental Science and Technology (2018), Vol. 52, No. 23, pp. 13972-13985	Paper describes analysis of glyphosate and AMPA in tapwater from multiple sampling sites in the U.S. Glyphosate and AMPA were not reported to have been found in any samples. Not relevant to EU risk assessment.
1109	Fate and behaviour in the environment	Caceres-Jensen L. et al.	2019	Electrochemical method to study the environmental behavior of Glyphosate on volcanic soils: Proposal of adsorption-desorption and transport mechanisms.	Journal of hazardous materials (2019), Vol. 379, pp. 120746	Adsorption /Desorption studies did not follow OECD guideline. Solutions did not contain CaCl2.
1110	Fate and behaviour in the environment	Cao L. et al.	2014	Determination of Herbicides and Its Metabolite in Soil and Water Samples by Capillary Electrophoresis-laser Induced Fluorescence Detection Using Microwave-assisted Derivatization	Analytical Sciences (2014), Vol. 30, No. 7, pp. 759	Analytical method paper, testing fortified environmental samples only to demonstrate method.
1111	Fate and behaviour in the environment	Choubert J. M. et al.	2011	Limiting the emissions of micro-pollutants- what efficiency can we expect from wastewater treatment plants?	Water Science and Technology (2011), Vol. 63, No. 1, pp. 57-65	No specific analysis results for glyphosate or AMPA reported. Investigation of the removal efficiencies of different treatment processes of wastewater treatment plants are not relevant to the data requirements.

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1112	Fate and behaviour in the environment	Chretien F. et al.	2017	Surface runoff and subsurface tile drain losses of neonicotinoids and companion herbicides at edge-of-field.	Environmental pollution (2017), Vol. 224, pp. 255-264	Concentration measurements in run-off and drainage water from fields cultivated with corn and soybean in Canada are not representative for European agricultural practice.
1113	Fate and behaviour in the environment	Clua A. et al.	2012	The effects of glyphosate on the growth of birdsfoot trefoil (<i>Lotus corniculatus</i>) and its interaction with different phosphorus contents in soil.	Journal of Agricultural Science (2012), Vol. 4, No. 7, pp. 208-218	No analysis of glyphosate or its metabolites. Outdoor study conducted in Argentina, hence conditions are not representative for Europe.
1114	Fate and behaviour in the environment	Daniai R. et al.	2019	FTIR, CHNS and XRD analyses define mechanism of glyphosate herbicide removal by electrocoagulation.	Chemosphere (2019), Vol. 233, pp. 559-569	Theoretical beaker scale test for removing glyphosate from water. Natural water was not used. Not relevant for EU risk assessment.
1115	Fate and behaviour in the environment	Daouk S. et al.	2015	Fluorescence spectroscopy to study dissolved organic matter interactions with agrochemicals applied in Swiss vineyards.	Environmental science and pollution research international (2015), Vol. 22, No. 12, pp. 9284-92	No new data on glyphosate are presented. The article focuses on analysis of dissolved organic matter in soil water samples and correlates them with glyphosate concentrations determined in another study (Daouk, 2013).
1116	Fate and behaviour in the environment	Degenhardt D. et al.	2012	Dissipation of glyphosate and aminomethylphosphonic acid in water and sediment of two Canadian prairie wetlands.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2012), Vol. 47, No. 7, pp. 631-9	Field trials in Canadian prairie wetlands are not representative for European agricultural practice.
1117	Fate and behaviour in the environment	Delmonico E. L. et al.	2014	Determination of glyphosate and aminomethylphosphonic acid for assessing the quality tap water using SPE and HPLC.	Acta Scientiarum Technology (2014), Vol. 36, No. 3, pp. 513-519	Development of glyphosate analytical method and demonstration of the method through analysis of public water supply samples from Brazil. Not relevant to EU risk assessment.
1118	Fate and behaviour in the environment	dos Santos S. C. et al.	2014	Development of electroanalytical methodology for determination of pesticide glyphosate in environmental samples	Revista Virtual de Quimica (2014), Vol. 6, No. 4, pp. 866-883	Mainly analytical method. Only one natural sample collected and analyzed to demonstrate method.
1119	Fate and behaviour in the environment	Erbán T. et al.	2018	The different behaviors of glyphosate and AMPA in compost-amended soil	Chemosphere (2018), Vol. 207, pp. 78-83	Effect of compost amendment on dissipation of glyphosate and AMPA in Czech soil after multiple glyphosate applications. Not relevant to EU risk assessment.
1120	Fate and behaviour in the environment	Ernakova I. T. et al.	2010	Bioremediation of glyphosate-contaminated soils.	Applied microbiology and biotechnology (2010), Vol. 88, No. 2, pp. 585-94	Biodegradation by selected bacterial strains in open microcosms and field plots in Russia are not relevant to the data requirement and not representative for European conditions
1121	Fate and behaviour in the environment	Farenhorst A. et al.	2015	Bulk deposition of pesticides in a Canadian city: Part 1. Glyphosate and other agricultural pesticides.	Water, Air, and Soil Pollution (2015), Vol. 226, No. 3, 47 p	Analysis of urban dust deposition samples from agricultural areas in Winnipeg, Canada are not representative for European agricultural practice
1122	Fate and behaviour in the environment	Faria R. R. et al.	2019	Parameters for glyphosate in OPLS-AA force field	Molecular Simulation (2019), 45(1), 80-85	Mechanism of action study not relevant to EU risk assessment. Use of molecular dynamics (MD) simulations to provide an atomistic detail in the description of such a system. Herein, partial atomic charges and dihedral angles were obtained quantum mechanism for glyphosate molecule. Parameters for MD simulation were implemented in the OPLS-AA force field to

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						better understand the herbicide mechanism action. Results showed that atomic charges were consistent with the database of the force field. Additionally, potential energy curves for the dihedrals were consistent and could be used to run MD simulations. Therefore, the parameterisation reported for this molecule can be useful to explain studies involving its interaction with many enzymes and proteins such as 5-enolpyruvylshikimate 3-phosphate synthase enzyme (EPSP). Furthermore, considering these new data in OPLS-AA, numerous simulations can be proposed to unveil the effects of the glyphosate as an environment contaminant.
1123	Fate and behaviour in the environment	Ferrario C. et al.	2017	Legacy and emerging contaminants in meltwater of three Alpine glaciers	Science of the Total Environment (2017), Vol. 574, pp. 350-357	The paper is about contaminants in meltwater of Alpine glaciers, no glyphosate or AMPA were measured.
1124	Fate and behaviour in the environment	Gasperi J. et al.	2010	Occurrence and removal of priority pollutants by lamella clarification and biofiltration	Water Research (2010), Vol. 44, No. 10, pp. 3065-3076	Experiments on wastewater treatment are not relevant to EU data requirements.
1125	Fate and behaviour in the environment	Giaccio G. C. M. et al.	2019	Glyphosate and nutrient retention in preferential flow pathways	Ecologia Austral (2019), Vol. 29, No. 3, pp. 329-338	Study of vegetative strips in Argentina, not relevant to EU.
1126	Fate and behaviour in the environment	Ginebreda A. et al.	2018	Reconciling monitoring and modeling: An appraisal of river monitoring networks based on a spatial autocorrelation approach - emerging pollutants in the Danube River as a case study	Science of the Total Environment (2018), Vol. 618, pp. 323-335	Relevant for Water Framework Directive but not pesticide registration. The results of this study show how auto-correlation models can aid water managers to improve the design of river monitoring networks. Not relevant for EU Risk Assessment.
1127	Fate and behaviour in the environment	Gloria O. N. et al.	2010	In vitro effects of four heavy metals on glyphosate utilization by some bacteria isolated from rice fields.	African Journal of Microbiology Research (2010), Vol. 4, No. 16, pp. 1775-1783	Experiments on the influence of heavy metals on the growth of isolated bacteria in the presence of glyphosate are not relevant to the data requirements.
1128	Fate and behaviour in the environment	Gomes M. P. et al.	2015	Consequences of phosphate application on glyphosate uptake by roots: Impacts for environmental management practices.	The Science of the total environment (2015), Vol. 537, pp. 115-9	Analysis of glyphosate in roots and leaves of hydroponically cultivated willow plants are not relevant to the data requirements.
1129	Fate and behaviour in the environment	Gurson A. P. et al.	2019	Mobility of 2,4-Dichlorophenoxyacetic Acid, Glyphosate, and Metribuzine Herbicides in Terra Rossa-Amended Soil: Multiple Approaches with Experimental and Mathematical Modeling Studies.	Water Air and Soil Pollution (2019), Vol. 230, No. 9, pp. Article No.: 220	Soil used for A/D and mobility testing is not a natural soil but rather a soil mixture. Not relevant for EU risk assessment.

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1130	Fate and behaviour in the environment	Gustavsson M. et al.	2017	Pesticide mixtures in the Swedish streams: Environmental risks, contributions of individual compounds and consequences of single-substance oriented risk mitigation	Science of the Total Environment (2017), Vol. 598, pp. 973-983	No glyphosate data presented.
1131	Fate and behaviour in the environment	Hansen C. T. et al.	2015	Re-evaluation of groundwater monitoring data for glyphosate and bentazone by taking detection limits into account.	The Science of the total environment (2015), Vol. 536, pp. 68-71	No new data presented, only discussion of statistical methods to re-evaluation.
1132	Fate and behaviour in the environment	Hedegaard M. J. et al.	2017	Microbial pesticide removal in rapid sand filters for drinking water treatment - Potential and kinetics (vol 48, pg 71, 2014).	Water Research (2017), Vol. 122, pp. 708-713	Erratum to Hedegaard et al. 2014; does not contain any data for glyphosate.
1133	Fate and behaviour in the environment	Hennault-Ethier L. et al.	2017	Herbaceous or Salix miyabeana 'SX64' narrow buffer strips as a means to minimize glyphosate and aminomethylphosphonic acid leaching from row crop fields.	Science of the total environment (2017), pp. 1177-1186	Field trials in Canada with glyphosate resistant crops and Salix miyabeana buffer strips are not relevant to the data requirement and not representative to European agricultural practice
1134	Fate and behaviour in the environment	Herath G. A. D. et al.	2019	Statistical optimization of glyphosate adsorption by biochar and activated carbon with response surface methodology.	Chemosphere (2019), Vol. 227, pp. 533-540	Test tube optimization of glyphosate adsorption using biochar and activated carbon. Not relevant for commercial application. Not relevant for EU risk assessment.
1135	Fate and behaviour in the environment	Herrman K. S. et al.	2012	Nutrient Loss Following Phragmites australis Removal in Controlled Soil Mesocosms	Water, air and soil pollution (2012), Vol. 223, No. 6, pp. 3333-3344	No analysis of glyphosate or its metabolites.
1136	Fate and behaviour in the environment	Hosseini N. et al.	2019	Removal of 2,4-D, glyphosate, trifluralin, and butachlor herbicides from water by polysulfone membranes mixed by graphene oxide/TiO2 nanocomposite: study of filtration and batch adsorption	JOURNAL OF ENVIRONMENTAL HEALTH SCIENCE AND ENGINEERING (2019), Vol. 17, No. 1, pp. 247-258	Testing of new synthetic membranes for glyphosate adsorption/rejection at lab scale not relevant for EU risk assessment.
1137	Fate and behaviour in the environment	Hu Y. S. et al.	2011	Removal of glyphosate from aqueous environment by adsorption using water industrial residual	Desalination (2011), Vol. 271, No. 1-3, pp. 150-156	Experiments on glyphosate adsorption to residual alum sludge from water treatment plants are not relevant to the data requirements.
1138	Fate and behaviour in the environment	Jarvis N.	2018	Meta-analysis of pesticide sorption in subsoil	Environmental Toxicology and Chemistry (2018), Vol. 37, No. 3, pp. 755-761	Comparison of the Koc model vs the power law model to characterize adsorption in sub-soils. While glyphosate existing data is considered, the approach is not relevant to EU risk assessment.
1139	Fate and behaviour in the environment	Johnsen A. R. et al.	2016	Comments on the article: Re-evaluation of groundwater monitoring data for glyphosate and bentazone by taking detection limits into account	Science of the Total Environment (2016), Vol. 557-558, pp. 914-915	No new data presented, only discussion of statistical methods for re-evaluation.

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1140	Fate and behaviour in the environment	Junges C. M. et al.	2013	Effectiveness evaluation of glyphosate oxidation employing the H(2)O(2)/UVC process: toxicity assays with <i>Vibrio fischeri</i> and <i>Rhinella arenarum</i> tadpoles.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2013), Vol. 48, No. 3, pp. 163-70	No relevant information on environmental fate included. Paper is about removal of glyphosate from wastewater polluted by commercial formulations of glyphosate
1141	Fate and behaviour in the environment	Kaur S. et al.	2017	Pesticides Curbing Soil Fertility: Effect of Complexation of Free Metal Ions	FRONTIERS IN CHEMISTRY (2017), Vol. 5, Article 43, pp. 1	Experiments on reaction of pesticides with isolated metal salts are not relevant to EU data requirements.
1142	Fate and behaviour in the environment	Keesstra S. D. et al.	2019	Straw mulch as a sustainable solution to decrease runoff and erosion in glyphosate-treated clementine plantations in Eastern Spain. An assessment using rainfall simulation experiments	Catena (2019), Vol. 174, pp. 95-103	No measurement of glyphosate in this article. Glyphosate only used for weed control.
1143	Fate and behaviour in the environment	Knerr H. et al.	2015	Micropollutants from WWTPs in Rheinland-Palatinate	Wasser und Abfall (2015), Vol. 17, No. 1/2, pp. 23-28	Does not present any numerical measurement data. Discusses evaluation of occurrence and levels of micropollutants at waste water treatment plants of rural and urban geographies.
1144	Fate and behaviour in the environment	Lashermes G. et al.	2010	Sorption and mineralization of organic pollutants during different stages of composting.	Chemosphere (2010), Vol. 79, No. 4, pp. 455-62	Sorption and mineralization in artificial lab compost mixtures are not relevant to the data requirement.
1145	Fate and behaviour in the environment	Linklater N. et al.	2013	Real-Time and Near Real-Time Monitoring Options for Water Quality.	Ahuja, S. (2013) pp. 189-225, Monitoring Water Quality: Pollution Assessment, Analysis, and Remediation, Monitoring Water Quality: Pollution Assessment, Analysis, and Remediation, Publisher: ELSEVIER SCIENCE BV, ISBN: 978-0-444-59395-5(H), 978-0-444-59404-4(P)	No specific monitoring data for glyphosate or AMPA is reported (a book chapter).
1146	Fate and behaviour in the environment	Lucadamo L. et al.	2018	Evaluation of glyphosate drift and anthropogenic atmospheric trace elements contamination by means of lichen transplants in a southern Italian agricultural district.	Air Quality Atmosphere and Health (2018), Vol. 11, No. 3, pp. 325-339	Atmospheric contamination due to glyphosate and trace elements were monitored in a southern Italian agricultural district by means of transplanted thalli of the lichen <i>Pseudevernia furfuracea</i> . An unusual technique which provides information on atmospheric dispersion of glyphosate but not relevant to risk assessment.
1147	Fate and behaviour in the environment	Lupi L. et al.	2015	Occurrence of glyphosate and AMPA in an agricultural watershed from the southeastern region of Argentina.	The Science of the total environment (2015), Vol. 536, pp. 687-694	Analysis of soil, water and sediment samples from agricultural areas in Argentina cultivated with soybean are not representative for European agricultural practice.
1148	Fate and behaviour in the environment	Lupi L. et al.	2019	Glyphosate runoff and its occurrence in rainwater and subsurface soil in the nearby area of agricultural fields in Argentina.	Chemosphere (2019), Vol. 225, pp. 906-914	Glyphosate measurements in rainfall in Brazil not relevant for EU risk assessment. Soil column leaching experiment on an Argentinian soil in which the control also contains glyphosate, and is not relevant to EU risk assessment.

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1149	Fate and behaviour in the environment	Magga Z. et al.	2012	Combining experimental techniques with non-linear numerical models to assess the sorption of pesticides on soils.	Journal of contaminant hydrology (2012), Vol. 129-130, pp. 62-9	The article describes batch experiments to derive equilibrium and non-equilibrium sorption parameters for glyphosate. However, the current guideline (OECD 106) for those experiments was not followed (use of triple distilled water instead of CaCl ₂ , only liquid phase analyzed but stability of test item not shown, test concentrations not reported). Further, continuous flow soil column experiments were conducted with synthetic groundwater. This experiment is not relevant according to the data requirements.
1150	Fate and behaviour in the environment	Majewski M. S. et al.	2014	Pesticides in Mississippi air and rain: a comparison between 1995 and 2007.	Environmental toxicology and chemistry (2014), Vol. 33, No. 6, pp. 1283-93	Analysis of air and rainfall samples from agricultural areas in Mississippi (USA) cultivated with soybean are not representative for European agricultural practice.
1151	Fate and behaviour in the environment	Malviya B. J. et al.	2015	Bioremediation of Glyphosate by Bacteria Isolated from Glyphosate Contaminated Soil.	Journal of Pure and Applied Microbiology (2015), Vol. 9, No. 4, pp. 3315-3319	Study of bacterial isolates from area of glyphosate production plant in India for ability to degrade glyphosate as a sole carbon source. Not relevant to EU risk assessment.
1152	Fate and behaviour in the environment	Mamy L. et al.	2010	Comparative environmental impacts of glyphosate and conventional herbicides when used with glyphosate-tolerant and non-tolerant crops.	Environmental pollution (2010), Vol. 158, No. 10, pp. 3172-8	Modelling approach on balances and overall toxicity potential; no new environmental fate data generated.
1153	Fate and behaviour in the environment	Mamy L. et al.	2016	Glyphosate fate in soils when arriving in plant residues.	Chemosphere (2016), Vol. 154, pp. 425-433	Laboratory experiment on oilseed rape plant residues treated with glyphosate and placed on/mixed with soil samples are not relevant to the data requirement.
1154	Fate and behaviour in the environment	Mardiana-Jansar K. et al.	2014	Residue determination and levels of glyphosate in surface waters, sediments and soils associated with oil palm plantation in Tasik Chini, Pahang, Malaysia	AIP Conference Proceedings (2014), 1614 (1, 2014 UKM FST Postgraduate Colloquium), pp. 795-802	Field trials in oil palm plantation in Malaysia are not representative for European agricultural practice.
1155	Fate and behaviour in the environment	Mattos R. et al.	2017	Quantitation and Adsorption of Glyphosate Using Various Treated Clay	Zeitschrift fuer Physikalische Chemie (2017), Vol. 231, No. 11-12, pp. 1815-1829	Adsorption studies for glyphosate conducted with clay chemically modified with metals. Not relevant to natural soils.
1156	Fate and behaviour in the environment	Mauffrey F. et al.	2017	Bacterial Community Composition and Genes for Herbicide Degradation in a Stormwater Wetland Collecting Herbicide Runoff	Water, air, and soil pollution (2017), Vol. 228, No. 12, 452 p	Investigation of bacterial community composition and genetic analyses not relevant to EU data requirements.
1157	Fate and behaviour in the environment	Mazzei P. et al.	2012	Quantitative evaluation of noncovalent interactions between glyphosate and dissolved humic substances by NMR spectroscopy.	Environmental science & technology (2012), Vol. 46, No. 11, pp. 5939-46	Experiments on reaction of glyphosate with isolated humic and fulvic acids are not related to the data requirements.

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1158	Fate and behaviour in the environment	McMurry S. T. et al.	2016	Land use effects on pesticides in sediments of prairie pothole wetlands in North and South Dakota.	The Science of the total environment (2016), Vol. 565, pp. 682-689	Analysis of wetland sediment samples from prairie pothole wetlands in North and South Dakota (USA) are not representative for European conditions and agricultural practice.
1159	Fate and behaviour in the environment	Mendez M. J. et al.	2017	Glyphosate and Aminomethylphosphonic acid (AMPA) contents in the respirable dust emitted by an agricultural soil of the central semiarid region of Argentina	AEOLIAN RESEARCH (2017), Vol. 29, pp. 23-29	Analysis of artificially generated dust from Argentinian field locations are not relevant to the data requirements and not representative for European agricultural practice.
1160	Fate and behaviour in the environment	Mercurio P. et al.	2014	Glyphosate persistence in seawater.	Marine pollution bulletin (2014), Vol. 85, No. 2, pp. 385-90	Experiments on glyphosate degradation in seawater samples from the Great Barrier Reef (Australia) are not representative to European conditions.
1161	Fate and behaviour in the environment	Metzger S. et al.	2014	Trace substance removal in wastewater treatment plants- Experiences in Baden-Wuerttemberg	Gewaesserschutz, Wasser, Abwasser (2014), 234, 57/1-57/19	Main focus of the paper is use of activated carbon to remove contaminants. No glyphosate data presented. AMPA data presented in only one figure. Text indicates AMPA not effectively removed by amounts of activated carbon being studied. Since the AMPA is derived from other sources, relevance to glyphosate degradation cannot be established.
1162	Fate and behaviour in the environment	Minh H. D. et al.	2015	Molecularly imprinted polymer-based electrochemical sensor for the sensitive detection of glyphosate herbicide.	International Journal of Environmental Analytical Chemistry (2015), Vol. 95, No. 15, pp. 1489-1501	Analytical method. Fortified tap water samples used to demonstrate method; no real world samples analyzed.
1163	Fate and behaviour in the environment	Moneke A. N. et al.	2010	Biodegradation of glyphosate herbicide in vitro using bacterial isolates from four rice fields.	African Journal of Biotechnology (2010), Vol. 9, No. 26, pp. 4067-4074	Experiments on in-vitro biodegradation with isolated bacteria strains are not relevant to the data requirement.
1164	Fate and behaviour in the environment	Moraes P. V. D. et al.	2010	Environmental behaviour of glyphosate. Comportamento ambiental do glifosato.	Scientia Agraria Paranaensis (2010), Vol. 9, No. 3, pp. 22-35	Literature review, secondary source of information.
1165	Fate and behaviour in the environment	Mueller T. C. et al.	2015	Methods Related to Herbicide Dissipation or Degradation under Field or Laboratory Conditions.	Weed Science (2015), Vol. 63, No. Sp. Iss. 1, pp. 133-139	No measurement of glyphosate or AMPA. Glyphosate was used for weed control.
1166	Fate and behaviour in the environment	Nourouzi M. M. et al.	2012	Application of ferric chloride for removal of Glyphosate: modeling of axial and radial flow impellers using artificial neural networks.	Journal of Environmental Engineering (2012), Vol. 138, No. 11, pp. 1157-1164	Investigation of formation of insoluble ferric chloride complex is not relevant to the data requirement.
1167	Fate and behaviour in the environment	Ocenaskova V. et al.	2012	Occurrence of pesticides not regularly monitored in the hydrosphere of the Czech Republic	Vodohospodarske Technicko-Ekonomicke Informace (2012), Vol. 54, No. 6, pp. 13S-16S	No glyphosate data presented. AMPA data in only one figure. Since the AMPA is derived from other sources, relevance to glyphosate degradation cannot be established.

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1168	Fate and behaviour in the environment	de Oliveira D. A. et al.	2014	Effects of pig slurry application on soil physical and chemical properties and glyphosate mobility.	Revista Brasileira de Ciencia do Solo (2014), Vol. 38, No. 5, pp. 1421-1431	Field trials on Brazilian sub-tropical savannah sites amended with pig slurry are not relevant to the data requirements and not representative of European conditions and agricultural practice.
1169	Fate and behaviour in the environment	Oliveira Pereira E. A. et al.	2019	Determination of glyphosate and aminomethylphosphonic acid by sequential-injection reversed-phase chromatography: method improvements and application in adsorption studies.	Analytical and bioanalytical chemistry (2019), Vol. 411, No. 11, pp. 2317-2326	Analytical method and adsorption testing using a glyphosate formulation: Roundup® Original DI.
1170	Fate and behaviour in the environment	Ololade O. O. et al.	2019	Influence of electrolyte composition and pH on glyphosate sorption by cow-dung amended soil	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2019), Vol. 54, No. 9, pp. 758-769	Nigerian soil, no textural characterization of soil, non-guideline CaCl2 concentration and no basis for comparison to guideline studies.
1171	Fate and behaviour in the environment	Ololade O. O. et al.	2019	Influence of cow-dung amendment on glyphosate mobility in soil	Toxicological & Environmental Chemistry (2019), Vol. 101, No. 3-6, pp. 265-280	Adsorption/desorption of Nigerian soil and cow dung from grazing cows. Not relevant to EU risk assessment.
1172	Fate and behaviour in the environment	Orcelli T. et al.	2018	Study of Interaction Between Glyphosate and Goethite Using Several Methodologies: an Environmental Perspective	Water, air, and soil pollution (2018), Vol. 229, No. 5, 150 p	Information regarding adsorption of glyphosate onto goethite under varying pH. Not relevant to EU risk assessment.
1173	Fate and behaviour in the environment	Otalvaro J. O. et al.	2018	Interaction of pesticides with natural and synthetic solids. Evaluation in dynamic and equilibrium conditions.	Environmental science and pollution research international (2018), Vol. 25, No. 7, pp. 6707-6719	Paper includes study of binding of glyphosate to Humic acid and effect of binding on dissolution of humic acid. Not relevant since binding to soil components were studied separately and not in soil.
1174	Fate and behaviour in the environment	Padilla J. T. et al.	2018	Glyphosate transport in two Louisiana agricultural soils: miscible displacement studies and numerical modeling	Soil Systems (2018), Vol. 2, No. 3, pp. 53	Does not follow OECD column leaching or adsorption / desorption guidelines.
1175	Fate and behaviour in the environment	Padilla J. T. et al.	2019	Time-dependent sorption and desorption of glyphosate in soils: multi-reaction modeling	Vadose Zone Journal (2019), Vol. 18, No. 1, pp.	Experiments on batch adsorption and time-dependent sorption are not in line with OECD 106 guideline or guidance on aged sorption, thus not relevant to the data requirement.
1176	Fate and behaviour in the environment	Padilla-Sanchez J. A. et al.	2012	Innovative determination of polar organophosphate pesticides based on high-resolution Orbitrap mass spectrometry.	Journal of mass spectrometry (2012), Vol. 47, No. 11, pp. 1458-65	Development and performance of a multi-component analytical method. For the analysis of agricultural soil samples, no experimental details are reported.
1177	Fate and behaviour in the environment	Penders E. J. M. et al.	2012	Genotoxic effects in the Eastern mudminnow (Umbra pygmaea) after prolonged exposure to River Rhine water, as assessed by use of the in vivo SCE and Comet assays	Environmental and Molecular Mutagenesis (2012), Vol. 53, No. 4, pp. 304-310	Toxicity of river water. No environmental data on glyphosate presented.

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1178	Fate and behaviour in the environment	Pereira E. A. O. et al.	2019	Adsorption of glyphosate on Brazilian subtropical soils rich in iron and aluminum oxides	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2019), Vol. 54, No. 11, pp. 906-914	Does not follow guideline OECD adsorption/desorption method.
1179	Fate and behaviour in the environment	Pinto E. et al.	2018	Quantitative analysis of glyphosate, glufosinate and AMPA in irrigation water by in situ derivatization-dispersive liquid-liquid microextraction combined with UPLC-MS/MS	Analytical methods (2018), Vol. 10, No. 5, pp. 554-561	Analytical method for detection of glyphosate, AMPA, glufosinate in water. Real water samples analyzed by locations not identified.
1180	Fate and behaviour in the environment	Polyakova N. N. et al.	2018	Effect of Herbicides Application on the Soil Biological Activity in the Tree Nursery.	Agrokimiya (2018), No. 12, pp. 35-41	Non-EU studies not relevant to EU. Study of cellulose degradation in glyphosate treated soil conducted in Russia.
1181	Fate and behaviour in the environment	Prasanthi Y. et al.	2012	Glyphosate levels in soil, water and air before and after application on agricultural farms	Organohalogen Compounds (2012), Vol. 74, pp. 316-319, 4 pp.	Non-EU study. Measurement of glyphosate concentrations in soil and runoff water from university site in Kentucky, USA. Not relevant for EU risk assessment.
1182	Fate and behaviour in the environment	Qin J. et al.	2013	Can rainwater induce Fenton-driven degradation of herbicides in natural waters?.	Chemosphere (2013), Vol. 92, No. 8, pp. 1048-52	Study not conducted in natural system. No direct relevance to risk assessment.
1183	Fate and behaviour in the environment	Ratola N. et al.	2014	Biomonitoring of pesticides by pine needles - Chemical scoring, risk of exposure, levels and trends	Science of the Total Environment (2014), Vol. 476-477, pp. 114-124	No monitoring of glyphosate in the study.
1184	Fate and behaviour in the environment	Rendon-von Osten J. et al.	2017	Glyphosate Residues in Groundwater, Drinking Water and Urine of Subsistence Farmers from Intensive Agriculture Localities: A Survey in Hopelchen, Campeche, Mexico.	International journal of environmental research and public health (2017), Vol. 14, No. 6, pp. E595	Analysis of groundwater, and drinking water samples from intensive agricultural areas in Mexico are not representative for European agricultural practice. Analysis of urine samples is not relevant to the data requirements.
1185	Fate and behaviour in the environment	Richards B. K. et al.	2012	Surveying upstate NY well water for pesticide contamination: Cayuga and Orange counties	Ground Water Monitoring & Remediation (2012), Vol. 32, No. 1, pp. 73-82	Analysis of pesticides in groundwater wells in the US not relevant to EU risk assessment. No glyphosate or AMPA measurements reported.
1186	Fate and behaviour in the environment	Romano-Armada N. et al.	2019	Construction of a combined soil quality indicator to assess the effect of glyphosate application	Science of the Total Environment (2019), Vol. 682, pp. 639-649	Soil quality assessment conducted based on Argentinian soils. Not relevant fo EU risk assessment.
1187	Fate and behaviour in the environment	Ronco A. E. et al.	2016	Water quality of the main tributaries of the Parana Basin: glyphosate and AMPA in surface water and bottom sediments	Environmental Monitoring and Assessment (2016), Vol. 188, No. 8, pp. 458	Analyses of glyphosate and AMPA water and sediment samples from Argentinian agricultural areas planted with genetically modified glyphosate-resistant crops are not representative for European agricultural practice

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1188	Fate and behaviour in the environment	Rott E. et al.	2017	Removal of phosphorus from phosphonate-loaded industrial wastewaters via precipitation/flocculation	JOURNAL OF WATER PROCESS ENGINEERING (2017), Vol. 17, pp. 188-196	No data on glyphosate or AMPA presented. Only references to journal articles before 2010.
1189	Fate and behaviour in the environment	Rudolph W.	2015	Greening conditions, glyphosate skepticism and groundwater protection: Three G-Core issues. Greeningauflagen, Glyphosatskepsis und Grundwasserschutz: Drei G-Themen im Fokus	Agrarmanager (2015), No. 8, pp. 58-61	There is no environmental fate data related to glyphosate. The article talks about farm machinery.
1190	Fate and behaviour in the environment	Sandy E. H. et al.	2013	Oxygen isotope signature of UV degradation of glyphosate and phosphonoacetate: tracing sources and cycling of phosphonates.	Journal of hazardous materials (2013), Vol. 260, pp. 947-54	Experiments on the reaction mechanism of molecule cleavage under UV radiation at pH 2.5 are not relevant to the data requirements.
1191	Fate and behaviour in the environment	Schulte-Oehlmann U. et al.	2011	Before the curtain falls: endocrine-active pesticides - a German contamination legacy.	Reviews of environmental contamination and toxicology (2011), Vol. 213, pp. 137-59	Literature review on pesticide occurrence in Germany. Neither experimental data nor specific results for glyphosate are reported.
1192	Fate and behaviour in the environment	Sebionio A. et al.	2012	The impact of four herbicides on soil minerals	Research Journal of Environmental and Earth Sciences (2012), Vol. 4, No. 6, pp. 617-624	Soils tested originate from region not representative for Europe (Nigeria) no analysis of glyphosate residues, only mineral ions (calcium, sodium, potassium, magnesium, zinc and iron)
1193	Fate and behaviour in the environment	Sen K. et al.	2017	Statistical optimization study of adsorption parameters for the removal of glyphosate on forest soil using the response surface methodology	Environmental earth sciences (2017), Vol. 76, No. 1, pp. 22	Experiments on glyphosate removal by Indian forest soils are not relevant to the data requirements.
1194	Fate and behaviour in the environment	Shanmugam S. R. et al.	2019	Adsorption and desorption behavior of herbicide using bio-based materials	Transactions of the ASABE (2019), Vol. 62, No. 6, pp. 1435-1445	Adsorption of glyphosate to activated carbon and biochar was measured as a potential soil amendment to bind glyphosate. Not relevant to EU risk assessment.
1195	Fate and behaviour in the environment	Shimako A. H. et al.	2017	Operational integration of time dependent toxicity impact category in dynamic LCA	Science of the Total Environment (2017), Vol. 599-600, pp. 806-819	Life-cycle assessment. No specific glyphosate end-points that can be used in EU assessment.
1196	Fate and behaviour in the environment	Shipitalo M. J. et al.	2010	Impact of grassed waterways and compost filter socks on the quality of surface runoff from corn fields.	Journal of environmental quality (2010), Vol. 39, No. 3, pp. 1009-18	Field experiments performed in the US on concentration of glyphosate in run-off from experimental watersheds cropped with glyphosate-tolerant corn collected in grassed artificial waterways and removal by artificial compost filter socks. These are not relevant to the data requirements and not representative for EU agricultural practice.
1197	Fate and behaviour in the environment	Shushkova T. et al.	2010	Glyphosate bioavailability in soil.	Biodegradation (2010), Vol. 21, No. 3, pp. 403-10	Experiments on soil degradation and adsorption in soil columns amended with mineral salts and introduced bacteria strains are not relevant to the data requirement

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1198	Fate and behaviour in the environment	Si Y-B. et al.	2013	Complex Interaction and Adsorption of Glyphosate and Lead in Soil	Soil & sediment contamination (2013), Vol. 22, No. 1, pp. 72-84	Experiments on the influence of Pb on glyphosate adsorption in NaNO ₃ solution are not relevant to the data requirements
1199	Fate and behaviour in the environment	Silva J. T. B. et al.	2018	Glyphosate and turbidity removal in water conditions by clarification with Tanfloc. Remocao de glifosato e turbidez em meio aquoso por meio da clarificacao com Tanfloc	Periodico Tche Quimica (2018), Vol. 15, No. 30, pp. 489-496	Demonstrates glyphosate removal from raw water at pH 5.0 - 5.5 using natural tannin flocculant, but glyphosate concentration tested (8 mg/L) is not a relevant concentration for water treatment.
1200	Fate and behaviour in the environment	Sjerps R. M. A. et al.	2017	Projected impact of climate change and chemical emissions on the water quality of the European rivers Rhine and Meuse: A drinking water perspective	Science of the Total Environment (2017), Vol. 601-602, pp. 1682-1694	No new data are presented. Modeling of future surface water quality (year 2050) based on assumptions on climate change and future emission scenarios are not relevant to the data requirements.
1201	Fate and behaviour in the environment	Smith D. R. et al.	2015	What is causing the harmful algal blooms in Lake Erie?	Journal of soil and water conservation (2015), Vol. 70, No. 2, p. 27A-29A	Paper is a general review with no new data about reasons for increased soluble P loading to Lake Erie.
1202	Fate and behaviour in the environment	Sonne A. T. et al.	2017	Assessing the chemical contamination dynamics in a mixed land use stream system	Water Research (2017), Vol. 125, pp. 141-151	No glyphosate measurements reported from water monitoring. Some AMPA monitoring but source of AMPA unknown hence not relevant for risk assessment.
1203	Fate and behaviour in the environment	Struger J. et al.	2015	Sources of aminomethylphosphonic acid (AMPA) in urban and rural catchments in Ontario, Canada: Glyphosate or phosphonates in wastewater?	Environmental pollution (2015), Vol. 204, pp. 289-97	Results of concentration measurements in Canadian urban and rural catchments are not representative for European agricultural practice.
1204	Fate and behaviour in the environment	Styczen M. et al.	2011	Macroscopic Evidence of Sources of Particles for Facilitated Transport during Intensive Rain	Vadose zone journal (2011), pp. 1151-1161	No new experimental data generated, only review & conclusions on results of data from literature.
1205	Fate and behaviour in the environment	Sviridov A. V. et al.	2011	New approaches to identification and activity estimation of glyphosate degradation enzymes.	Biochemistry. Biokhimiia (2011), Vol. 76, No. 6, pp. 720-5	Experiments on isolated and cultivated bacteria are not relevant to EU data requirement.
1206	Fate and behaviour in the environment	Sviridov A. V. et al.	2012	Distribution of glyphosate and methylphosphonate catabolism systems in soil bacteria Ochrobactrum anthropi and Achromobacter sp.	Applied Microbiology and Biotechnology (2012), Vol. 93, pp. 787-796	Experiments on isolated and cultivated bacteria are not relevant to the EU data requirements.
1207	Fate and behaviour in the environment	Tang X. et al.	2012	A review of rapid transport of pesticides from sloping farmland to surface waters: Processes and mitigation strategies.	JOURNAL OF ENVIRONMENTAL SCIENCES (2012), Vol. 24, No. 3, pp. 351-361	The paper is a review of pesticide transport from sloping farmland to surface water. Glyphosate is not explicitly mentioned.

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1208	Fate and behaviour in the environment	Tzaskos D. F. et al.	2012	Development of sampling for quantification of glyphosate in natural waters.	Ciencia e Agrotecnologia (2012), Vol. 36, No. 4, pp. 399-405	Development of an analytical method for water analysis in Brazil is not relevant to the data requirements for environmental fate. The analyses of Brazilian stream water samples from an area with transgenic soy plantations are not representative for European agricultural practice.
1209	Fate and behaviour in the environment	Van Stempvoort D. R. et al.	2016	Glyphosate residues in rural groundwater, Nottawasaga River Watershed, Ontario, Canada.	Pest management science (2016), Vol. 72, No. 10, pp. 1862-72	Results of concentration measurements in Canadian shallow rural groundwater are not representative for European agricultural practice.
1210	Fate and behaviour in the environment	Virginia A. et al.	2018	Industrial agriculture and agroecological transition systems: A comparative analysis of productivity results, organic matter and glyphosate in soil	Agricultural systems (2018), pp. 103-112	Economic and ecological study performed in Argentina. Comparison of industrial agriculture with agro-ecological system. Soil organic matter and glyphosate / AMPA concentrations in soil measured in addition to economic measures.
1211	Fate and behaviour in the environment	Vrain T. C.	2016	The nutritional status of GMOs	Acta horticulturae (2016), No. 1124, pp. 97-100	Limited review and commentary on glyphosate properties in relation to GMO nutritional status.
1212	Fate and behaviour in the environment	Waiman C. V. et al.	2013	A real time in situ ATR-FTIR spectroscopic study of glyphosate desorption from goethite as induced by phosphate adsorption: effect of surface coverage.	Journal of colloid and interface science (2013), Vol. 394, pp. 485-9	Adsorption experiments with isolate minerals (goethite and magnetite) are not relevant to the data requirements.
1213	Fate and behaviour in the environment	Wang K. et al.	2018	Application of least-squares support vector machines for quantitative evaluation of known contaminant in water distribution system using online water quality parameters	Sensors (2018), Vol. 18, No. 4, pp. 938/1-938/19	No reference to glyphosate, AMPA, HMPA
1214	Fate and behaviour in the environment	Welch H. L.	2015	Occurrence of pesticides in groundwater underlying areas of high-density row-crop production in Alabama, 2009-2013	Scientific Investigations Report (2015), 2015-5014, 1-44	Groundwater monitoring data from areas of high density row-crop production in the US are not representative for European agricultural practice.
1215	Fate and behaviour in the environment	Wu X. et al.	2011	Degradation characteristics of organophosphate-degradation microorganism BR13.	Environmental Science & Technology (2011), Vol. 34, No. 11, pp. 54-58	Experiments on degradation of glyphosate by individual micro-organisms isolated from activated sludge are not relevant to the data requirements.
1216	Fate and behaviour in the environment	Xiao G. et al.	2020	D151 resin preloaded with Fe(3+) as a salt resistant adsorbent for glyphosate from water in the presence 16% NaCl	Ecotoxicology and environmental safety (2020), Vol. 190, pp. 110140	Experimental investigation of resins for removal of glyphosate from water. Not relevant for EU risk assessment.
1217	Fate and behaviour in the environment	Yadav V. et al.	2017	Effect of light conditions and chemical characteristics of water on dissipation of glyphosate in aqueous medium.	Environmental monitoring and assessment (2017), Vol. 189, No. 12, pp. 613	Non-EU study (India). Used glyphosate formulation to study degradation of glyphosate in distilled water and local water. Not relevant for EU risk assessment.

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1218	Fate and behaviour in the environment	Yang X. et al.	2015	Short-term transport of glyphosate with erosion in Chinese loess soil - a flume experiment.	The Science of the total environment (2015), Vol. 512-513, pp. 406-414	Laboratory experiments on run-off with hydraulic flumes are not relevant to EU data requirements.
1219	Fate and behaviour in the environment	Zhang X. et al.	2019	Photomineralization of Effluent Organic Phosphorus to Orthophosphate under Simulated Light Illumination	Environmental Science & Technology (2019), Vol. 53, No. 9, pp. 4997-5004	Study of photomineralization of Effluent Organic Phosphorus (including glyphosate) to Orthophosphate under Simulated Light Illumination. Not relevant to EU risk assessment.
1220	Fate and behaviour in the environment	Zhao Y. Q. et al.	2013	Current status of pesticides application and their residue in the water environment in Ireland	International journal of environmental studies (2013), Vol. 70, No. 1, pp. 59-72	Glyphosate use data are the basis on suggesting potential water pollution without presenting any water monitoring data.
1221	Residues in or on treated products, food and feed	Adeniyi O. et al.	2016	Quantitation of pesticide residue in water and food in Louisiana, USA	Journal of Water Resource and Protection (2016), Vol. 8, No. 12, pp. 1145-1157	Not relevant. Glyphosate not included in analysis.
1222	Residues in or on treated products, food and feed	Aikpo H. F. et al.	2016	Evaluation de la contamination des tubercules de manioc (Manihot esculenta Crantz) par les pesticides dans la zone cotonniere de Djidja (Benin) [Evaluation of contamination of cassava tubers (Manihot esculenta Crantz) by pesticides in cotton area of Djid	International Journal of Innovation and Applied Studies (2016), Vol. 14, no. 3, pp. 744	Based on the abstract the publication is likely to provide information on the uptake of glyphosate residues by root crops. However, since there is no information on the amount of glyphosate applied (if any), it is not possible to draw any conclusion from the results presented.
1223	Residues in or on treated products, food and feed	Bandana B. et al.	2015	Dissipation kinetics of glyphosate in tea and tea-field under northwestern mid-hill conditions of India	Journal of Pesticide Science (2015), Vol. 40, No. 3, 82 pp. 2015	Concerns a crop that is not a representative crop for renewal.
1224	Residues in or on treated products, food and feed	Barker A. L. et al.	2019	Fate of Glyphosate during Production and Processing of Glyphosate-Resistant Sugar Beet (Beta vulgaris).	Journal of agricultural and food chemistry (2019), Vol. 67, No. 7, pp. 2061-2065	Provides information on processing of glyphosate in glyphosate tolerant sugar beet. Not a relevant use for renewal.
1225	Residues in or on treated products, food and feed	Bertrand S.	2010	Pesticide consumption at farm level and residues in the environment and in milk	Bulletin of the International Dairy Federation (2010), Vol. 443, pp. 33-38	Article focuses on intake of pesticides by farm animals in general. Glyphosate is only mentioned in one table (list of log POW) and the examples given and described in the article deal with other active substances.
1226	Residues in or on treated products, food and feed	Boily M. et al.	2017	Foraging in maize field areas: A risky business?	Science of the Total Environment (2017), Vol. 601, pp. 1522-1532	Study compared conventionally and organically grown crops. Results could not be attributed to glyphosate, other products used on conventional plot.
1227	Residues in or on treated products, food and feed	Ciasca B. et al.	2020	Rapid and reliable detection of glyphosate in pome fruits, berries, pulses and cereals by flow injection - Mass spectrometry.	Food chemistry (2020), Vol. 310, pp. 125813	Residue analytical method. Wheat and chickpea not relevant to the uses considered for renewal in the EU. Only few real samples analysed. Therefore, not "representative" in terms of monitoring.

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1228	Residues in or on treated products, food and feed	Gelinas P. et al.	2018	Wheat preharvest herbicide application, whole-grain flour properties, yeast activity and the degradation of glyphosate in bread	International journal of food science & technology (2018), Vol. 53, No. 7, pp. 1597-1602	Provides information on effects of glyphosate on flour properties in baking following preharvest application in wheat. Not a relevant use for renewal.
1229	Residues in or on treated products, food and feed	Ghazala Y. et al.	2018	Monitoring and risk assessment due to presence of heavy metals and pesticides in tea samples.	Food Science and Technology (Campinas), (2018), Vol. 38, No. 4, pp. 625-628	Reports on glyphosate detection in tea samples from Pakistan, but with no information on the analytical method used or way to evaluate results. Not relevant to EU risk assessment.
1230	Residues in or on treated products, food and feed	Goen T. et al.	2017	Efficiency control of dietary pesticide intake reduction by human biomonitoring.	International journal of hygiene and environmental health (2017), Vol. 220, No. 2 Pt A, pp. 254-260	Pilot study of differences in urinary levels of several pesticides (including glyphosate) for two individuals following a conventional or organic diet. Limited data; not relevant for risk assessment.
1231	Residues in or on treated products, food and feed	Goldstein D. A.	2017	Glyphosate residues in feed.	Journal of Animal Science (2017), Vol. 95, 367 p., Suppl. 4	Overview of MRL process and summary of glyphosate in food and feed.
1232	Residues in or on treated products, food and feed	Gotti R. et al.	2019	Field-amplified sample injection and sweeping micellar electrokinetic chromatography in analysis of glyphosate and aminomethylphosphonic acid in wheat.	Journal of chromatography A (2019), Vol. 1601, pp. 357-364	Primarily an analytical methods paper. The authors report the analysis of 4 commercial wheat flour samples (residues below detection limit) and one wheat grain sample (glyphosate residues 243 mg/kg). The grain sample was from plants sprayed pre-harvest in a growth chamber; no details on application rate and timing provided, so cannot assess residues.
1233	Residues in or on treated products, food and feed	Herrera Lopez S. et al.	2019	Method validation and application of a selective multiresidue analysis of highly polar pesticides in food matrices using hydrophilic interaction liquid chromatography and mass spectrometry	Journal of Chromatography A (2019), 1594, 93-104	Analytical method; no monitoring data.
1234	Residues in or on treated products, food and feed	Jan M. R. et al.	2018	Flow injection spectrophotometric determination of glyphosate herbicide in wheat grains via condensation reaction with p-dimethylaminobenzaldehyde	South African Journal of Chemistry (2018), 71(1), 39-45	This is primarily an analytical method paper. No details of analysis of real samples included, just overall average of 62 wheat grain samples from South Africa.
1235	Residues in or on treated products, food and feed	John J. et al.	2018	Glyphosate monitoring in water, foods, and urine reveals an association between urinary glyphosate and tea drinking: a pilot study.	International Journal of Environmental Health Engineering (2018), Vol. 7, 2 p	Pilot study in non-EU country (US) with limited analysis of food and urine samples, using semi-quantitative ELISA assay developed for water and with no reporting of validation in other matrices. Exposure assessment not relevant for EU consumers.
1236	Residues in or on treated products, food and feed	Khan N. et al.	2016	HPLC determination and comparative analysis of persistent organic compounds in different environmental matrices	Asian Journal of Chemistry (2016), Vol. 28, No. 2, pp. 339-342	No analytical results (or even validation data) for glyphosate
1237	Residues in or on treated products, food and feed	Lopez-Blanco R. et al.	2018	Experimental and theoretical determination of pesticide processing factors to model their behavior during virgin olive oil production	Food Chemistry (2018), Vol. 239, pp. 9-16	No glyphosate data included in article (only trimesium ion).

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1238	Residues in or on treated products, food and feed	Machado B. A. et al.	2019	X-ray Spectroscopy Fostering the Understanding of Foliar Uptake and Transport of Mn by Soybean (Glycine max L. Merrill): Kinetics, Chemical Speciation, and Effects of Glyphosate.	Journal of agricultural and food chemistry (2019), Vol. 67, No. 47, pp. 13010-13020	No data on the transport of glyphosate in the crop. No glyphosate residue data; Furthermore it is not good agriculture practice to tank mix glyphosate with a fertilizer.
1239	Residues in or on treated products, food and feed	Mesnage R. et al.	2015	Laboratory Rodent Diets Contain Toxic Levels of Environmental Contaminants: Implications for Regulatory Tests.	PLoS one (2015), Vol. 10, No. 7, pp. e0128429	Measures levels of GMOs and various contaminants (including glyphosate and AMPA) in rodent diets.
1240	Residues in or on treated products, food and feed	Nandula V. K. et al.	2015	Herbicide Absorption and Translocation in Plants using Radioisotopes.	Weed Science (2015), Vol. 63, No. Sp. Iss. 1, pp. 140-151	Methodology paper on the conduct of absorption and translocation studies of herbicides using radioisotopes.
1241	Residues in or on treated products, food and feed	Nongadere A. et al.	2011	Chronic dietary risk characterization for pesticide residues: A ranking and scoring method integrating agricultural uses and food contamination data	Food and Chemical Toxicology (2011), Vol. 49, No. 7, pp. 1484-1510	The article presents a method to identify pesticide residues and foodstuffs for inclusion in national monitoring programs with different priority levels. In the article a large number of active substances are included. For glyphosate the conclusion does not change the end-point for the dietary risk assessment.
1242	Residues in or on treated products, food and feed	Oliveira P. C. et al.	2018	Direct electrochemical detection of glyphosate at carbon paste electrode and its determination in samples of milk, orange juice, and agricultural formulation.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2018), Vol. 53, No. 12, pp. 817-823	Analytical method. Study did not include analysis of any relevant samples (only fortified samples).
1243	Residues in or on treated products, food and feed	Perboni L. T. et al.	2018	Yield, germination and herbicide residue in seeds of preharvest desiccated wheat	JOURNAL OF SEED SCIENCE (2018), Vol. 40, No. 3, pp. 304-312	Provides information on glyphosate pre-harvest use in wheat. Not a relevant use for renewal.
1244	Residues in or on treated products, food and feed	Poppi A. C. O. et al.	2018	Influence of chemical pesticides on the survival of lactic acid bacteria in silage inoculants.	Proceedings of the International Silage Conference (XVIII ISC 2018), 24-26 July 2018, Bonn, Germany (2018), pp. 312-313	Effect of inadvertent contamination of silage inoculant with glyphosate in spray tank.
1245	Residues in or on treated products, food and feed	Tang X. Y. et al.	2018	Uptake, translocation, distribution and metabolism of glyphosate in target weeds and non-target tea trees in tea garden.	Journal of Food Safety and Quality (2018), Vol. 9, No. 18, pp. 4900-4905	The article does not include new data on metabolism of glyphosate in tea, but rather summarizes existing data.
1246	Residues in or on treated products, food and feed	Tassielli G. et al.	2018	Environmental life cycle assessment of fresh and processed sweet cherries in southern Italy	Journal of Cleaner Production (2018), 171, 184-197	Life cycle analysis of different production methods in cherry orchards. Glyphosate is one of numerous pesticides used during cultivation. No observations related to glyphosate in study.
1247	Residues in or on treated products, food and feed	Tu Q. et al.	2019	In situ colorimetric detection of glyphosate on plant tissues using cysteamine-modified gold nanoparticles.	The Analyst (2019), Vol. 144, No. 6, pp. 2017-2025	Analytical method for in situ visual detection of glyphosate in field treated samples. Not relevant for risk assessment.
1248	Residues in or on treated products, food and feed	Van Eenennaam A. L. et al.	2017	Detection of dietary DNA, protein, and glyphosate in meat, milk, and eggs.	Journal of animal science (2017), Vol. 95, No. 7, pp. 3247-3269	Review of existing information on glyphosate residues in meat, milk and eggs. No new data.

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	products, food and feed					
1249	Residues in or on treated products, food and feed	Wumbei A. et al.	2019	Glyphosate in yam from Ghana	Food Additives & Contaminants, Part B: Surveillance (2019), Vol. 12, No. 4, pp. 231-235	Description of analytical method and use in analyzing yam samples from Ghana. Some samples had detectable residues (>0.04 mg/kg), all below the LOQ of 0.12 mg/kg. Not relevant - method had low recovery (34%) and results not relevant for EU.
1250	Residues in or on treated products, food and feed	Zhao J. et al.	2018	Detection of glyphosate residues in companion animal feeds.	Environmental pollution (2018), Vol. 243, No. Pt B, pp. 1113-1118	Analysis of glyphosate residues in companion animal feed.
1251	Toxicology and metabolism	Abarikwu S. O. et al.	2015	Combined effects of repeated administration of Bretmont Wipeout (glyphosate) and Ultrazin (atrazine) on testosterone, oxidative stress and sperm quality of Wistar rats.	Toxicology mechanisms and methods (2015), Vol. 25, No. 1, pp. 70-80	Formulation provided to Wistar rats via oral gavage in corn oil.
1252	Toxicology and metabolism	Abass K. et al.	2012	Characterization of human cytochrome P450 induction by pesticides	Toxicology (2012), Vol. 294, No. 1, pp. 17-26	No significant glyphosate related effects.
1253	Toxicology and metabolism	Abass K. et al.	2013	The inhibition of major human hepatic cytochrome P450 enzymes by 18 pesticides: Comparison of the N-in-one and single substrate approaches	Toxicology In Vitro (2013), Vol. 27, No. 5, pp. 1584-1588	Glyphosate not mentioned in the paper.
1254	Toxicology and metabolism	Aboukila R. S. et al.	2014	Cytogenetic study on the effect of bentazon and glyphosate herbicide on mice.	Alexandria Journal of Veterinary Sciences (2014), Vol. 41, pp. 95-101	This publication is considered not relevant because a glyphosate formulation (Glicica) was used instead of glyphosate and the route of administration was intraperitoneal injection which is an inappropriate route of administration for the occupational and food risk assessment of glyphosate.
1255	Toxicology and metabolism	Addae J. I. et al.	2011	Effects of AMPA and clomethiazole on spreading depression cycles in the rat neocortex in vivo	European Journal of Pharmacology (2011), Vol. No. 1-3, pp. 41-46	The article is investigating AMPA Receptor with drugs applied i.p. and topically.
1256	Toxicology and metabolism	Alarcon R. et al.	2019	Neonatal exposure to a glyphosate-based herbicide alters the histofunctional differentiation of the ovaries and uterus in lambs.	Molecular and cellular endocrinology (2019), Vol. 482, pp. 45-56	Formulation tested (Roundup Full II, Argos SRL, Santa Fe, Argentina; 54 g/100 mL glyphosate)
1257	Toxicology and metabolism	Altamirano G. A. et al.	2018	Postnatal exposure to a glyphosate-based herbicide modifies mammary gland growth and development in Wistar male rats.	Food and chemical toxicology (2018), Vol. 118, pp. 111-118	Formulation tested (Roundup FULL II, potassium salt; 54% a.e.)
1258	Toxicology and metabolism	Aminov A. I. et al.	2013	Effect of the herbicide Roundup on the activity of Glycosidases of invertebrates and juvenile fish.	Inland Water Biology (2013), Vol. 6, No. 4, pp. 351-356	Formulation tested in vitro (Roundup, produced and packaged by ZAO Avgust, Russia; 36% glyphosate).
1259	Toxicology and metabolism	Anakwue R.	2019	Cardiotoxicity of Pesticides: Are Africans at Risk?	Cardiovascular toxicology (2019), Vol. 19, No. 2, pp. 95-104	Review article with no new data.
1260	Toxicology and metabolism	Anifandis G. et al.	2017	The In Vitro Impact of the Herbicide Roundup on Human Sperm Motility and Sperm Mitochondria.	Toxics (2017), Vol. 6, No. 1, pp. 2	Formulation tested in vitro (Roundup, not characterized).

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1261	Toxicology and metabolism	Williams, G. M. et al.	2018	Corrigendum to: A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment (Critical Reviews in Toxicology, (2016), 46, sup1, (3-20), 10.1080/10408444.2016.1214677).	Critical Reviews in Toxicology (2018), Vol. 48, No. 10, pp 907-908	Corrigendum to paper updating acknowledgements and author conflicts of interest.
1262	Toxicology and metabolism	Mesnage R. et al.	2017	Erratum to: Transcriptome profile analysis reflects rat liver and kidney damage following chronic ultra-low dose Roundup exposure (Environmental Health: A Global Access Science Source (2015) 14:70 DOI: 10.1186/s12940-015-0056-1).	Environmental Health (2017), Vol. 16, No. 1, pp. 28	This is erratum to Mesnage et al., Environmental health (2015), Vol. 14, article No. 70.
1263	Toxicology and metabolism	Anon.	2013	Pesticide Exposure in Children (vol 130, pg e1757, 2012).	Pediatrics (2013), Vol. 131, No. 5, pp. 1013	No glyphosate data generated/presented.
1264	Toxicology and metabolism	Antoniou M. N. et al.	2019	Glyphosate does not substitute for glycine in proteins of actively dividing mammalian cells.	BMC research notes (2019), Vol. 12, No. 1, pp. 494	This publication is found not relevant because the end-point investigated (substitution of glycine by glyphosate in protein synthesis) is not appropriate for the risk assessment of glyphosate.
1265	Toxicology and metabolism	Aroonvilairat S. et al.	2015	Effect of pesticide exposure on immunological, hematological and biochemical parameters in Thai orchid farmers-a cross-sectional study	International Journal of Environmental Research and Public Health (2015), Vol. 12, No. 6, pp. 5846-5861	This is a general pesticides paper and not specific to glyphosate.
1266	Toxicology and metabolism	Asita A. O. et al.	2012	Cytotoxicity and genotoxicity of some agropesticides used in Southern Africa	Journal of Toxicology and Environmental Health Sciences (2012), Vol. 4, No. 10, pp. 175-184	Formulation tested in vitro (Wipe-out, Kombat (Pty) Ltd, South Africa; 360 g/L glyphosate). Tested a plant species with a herbicide for adverse end-points; not relevant to human health end-points.
1267	Toxicology and metabolism	Astiz M. et al.	2012	The oxidative damage and inflammation caused by pesticides are reverted by lipotic acid in rat brain.	Neurochemistry international (2012), Vol. 61, No. 7, pp. 1231-41	In vivo administration via intraperitoneal injection which is not a relevant exposure route for EU glyphosate renewal.
1268	Toxicology and metabolism	Astiz M. et al.	2013	Pesticide-induced decrease in rat testicular steroidogenesis is differentially prevented by lipoate and tocopherol.	Ecotoxicology and environmental safety (2013), Vol. 91, pp. 129-38	In vivo administration via intraperitoneal injection which is not a relevant exposure route for EU glyphosate renewal.
1269	Toxicology and metabolism	Avdatek F. et al.	2018	Ameliorative effect of resveratrol on testicular oxidative stress, spermatological parameters and DNA damage in glyphosate-based herbicide-exposed rats.	Andrologia (2018), Vol. 50, No. 7, pp. e13036	Glyphosate based formulation tested (Knockdown 48 SL) which is not comparable to the EU renewal.
1270	Toxicology and metabolism	Avdatek F. et al.	2018	Protective effect of N-acetylcysteine on testicular oxidative damage, spermatological parameters and DNA damage in glyphosate-based herbicide-exposed rats.	Kocatepe Veterinary Journal (2018), Vol. 11, No. 3, pp. 292-300	Formulation tested (Knockdown 48 SL, Turkey) which is not comparable to the EU renewal.

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1271	Toxicology and metabolism	Avila-Vazquez M. et al.	2018	Environmental exposure to glyphosate and reproductive health impacts in agricultural population of Argentina.	Journal of Environmental Protection (2018), Vol. 9, No. 3, pp. 241-253	This publication is considered not relevant for the risk assessment of glyphosate because the general population followed was exposed to multiple environmental factors making it impossible to establish a causal relationship between exposure to glyphosate and reproductive disorders.
1272	Toxicology and metabolism	Ayanda O. I. et al.	2012	Histopathological examination of the liver and gills of <i>Clarias gariepinus</i> treated with glyphosate.	Environmental Research Journal (2012), Vol. 6, No. 3, pp. 228-234	Formulation tested in aquatic species (Roundup 480 mg/L isopropanol salt; 360 g/L a.e.). Effects clearly attributable to surfactant.
1273	Toxicology and metabolism	Babic Z. et al.	2019	Report of the Poison Control Centre for the period from 1 January to 31 December 2018; Original title: Izvjesce Centra za kontrolu otrovanja za razdoblje od 1. siječnja do 31. prosinca 2018	Arhiv Za Higijenu Rada i Toksikologiju (2019), Vol. 70, No. 1, pp. 69-73	Glyphosate based herbicide mentioned once and no glyphosate specific data included in the study.
1274	Toxicology and metabolism	Bader M. A. et al.	2015	Effect of quercetin against Roundup and/or fluoride induced biochemical alterations and lipid peroxidation in rats	International Journal of Pharmaceutical Sciences Review and Research (2015), Vol. 34, No. 2, pp. 168-175	Excessively high 28-day repeat dose at 500 mg/kg/day glyphosate based herbicide and is therefore not comparable to the EU glyphosate renewal.
1275	Toxicology and metabolism	Bali Y. A. et al.	2019	Learning and memory impairments associated to acetylcholinesterase inhibition and oxidative stress following glyphosate based-herbicide exposure in mice.	Toxicology (2019), Vol. 415, pp. 18-25	Formulation tested (Roundup herbicide (glyphosate concentration 360 g/l IPA salt, Monsanto) which contains a surfactant not present in the representative glyphosate used in the EU renewal process.
1276	Toxicology and metabolism	Bates N. et al.	2013	Glyphosate toxicity in animals.	Clinical Toxicology (2013), Vol. 51, No. 10, pp. 1243	Correspondence adds no new data on human health end-points.
1277	Toxicology and metabolism	Beecham J. E. et al.	2015	The possible link between autism and glyphosate acting as glycine mimetic - a review of evidence from the literature with analysis	Journal of Molecular and Genetic Medicine (2015), Vol. 9, No. 4, pp. 1000197/1-1000197/16	This publication is considered not relevant for glyphosate risk assessment because it is not based on experimental work and no epidemiologic methodology was followed.
1278	Toxicology and metabolism	Bellantuono V. et al.	2014	Pesticides alter ion transport across frog (<i>Pelophylax kl. esculentus</i>) skin	Chemistry in ecology (2014), Vol. 30, No. 7, pp. 602-610	End-point not relevant to human health risk assessment in the EU renewal.
1279	Toxicology and metabolism	Benitez Leite S. et al.	2019	DNA damage induced by exposure to pesticides in children of rural areas in Paraguay	Indian journal of medical research (2019), Vol. 150, No. 3, pp. 290-296	No evaluation of the glyphosate used as part of the study. Study provides a comparison of children living near transgenic soybean fields to a control group near crops managed with biological controls.
1280	Toxicology and metabolism	Beranger R. et al.	2018	Multiple pesticide analysis in hair samples of pregnant French women: Results from the ELFE national birth cohort.	Environment International (2018), Vol. 120, pp. 43-53	No data presented on glyphosate, therefore not relevant for the EU renewal.
1281	Toxicology and metabolism	Bernieri T. et al.	2019	Occupational exposure to pesticides and thyroid function in Brazilian soybean farmers.	Chemosphere (2019), Vol. 218, pp. 425-429	General pesticide exposures, not glyphosate specific, therefore not relevant for the EU renewal.
1282	Toxicology and metabolism	Bernieri T. et al.	2019	Effect of pesticide exposure on total antioxidant capacity and biochemical parameters in Brazilian soybean farmers	Drug and Chemical Toxicology (2019), Ahead of Print	General pesticide exposure biomonitoring study, not glyphosate specific and therefore not relevant for the EU renewal.

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1283	Toxicology and metabolism	Bhardwaj J. K. et al.	2019	Effective attenuation of glyphosate-induced oxidative stress and granulosa cell apoptosis by vitamins C and E in caprines.	Molecular reproduction and development (2019), Vol. 86, No. 1, pp. 42-52	Glyphosate based herbicide tested with in vitro test system. As this formulation is not the representative formulation used in the EU renewal process, it is not relevant.
1284	Toxicology and metabolism	Buralli R. J. et al.	2018	Respiratory condition of family farmers exposed to pesticides in the state of Rio de Janeiro, Brazil.	International Journal of Environmental Research and Public Health (2018), Vol. 15, No. 6, pp. 1203	General pesticide exposures, not glyphosate specific, therefore not relevant for the EU renewal.
1285	Toxicology and metabolism	Burella P. M. et al.	2017	Evaluation of Stage-Dependent Genotoxic Effect of Roundup® (Glyphosate) on Caiman latirostris Embryos.	Archives of environmental contamination and toxicology (2017), Vol. 72, No. 1, pp. 50-57	Glyphosate based herbicide tested on reptiles. End-point and species not relevant to EU annex I renewal.
1286	Toxicology and metabolism	Camacho A. et al.	2017	The health consequences of aerial spraying illicit crops: The case of Colombia.	Journal of health economics (2017), Vol. 54, pp. 147-160	This publication is considered not relevant for the risk assessment of glyphosate because it is too general and no specific epidemiological method was followed to establish an association between the application of glyphosate and disease outcome.
1287	Toxicology and metabolism	Caramello C. S. et al.	2017	Evaluation of herbicide glyphosate effects in the fish <i>Prochilodus lineatus</i> using chromosome aberration test.	Revista Veterinaria (2017), Vol. 28, No. 1, pp. 65-68	Formulation tested (Roundup Full II), not representative for the renewal.
1288	Toxicology and metabolism	Cassault-Meyer E. et al.	2014	An acute exposure to glyphosate-based herbicide alters aromatase levels in testis and sperm nuclear quality.	Environmental toxicology and pharmacology (2014), Vol. 38, No. 1, pp. 131-40	This publication is considered not relevant for the risk assessment of glyphosate because a glyphosate formulation (Roundup Grand Travaux Plus) was tested instead of glyphosate.
1289	Toxicology and metabolism	Castelani P. et al.	2013	Novel adjuvants for high load glyphosate formulations	SOFW Journal (2013), Vol. 139, No. 6, pp. 30-34,36	Formulation chemistry paper and therefore not relevant to the EU renewal of glyphosate.
1290	Toxicology and metabolism	Cattani D. et al.	2017	Developmental exposure to glyphosate-based herbicide and depressive-like behavior in adult offspring: Implication of glutamate excitotoxicity and oxidative stress.	Toxicology (2017), Vol. 387, pp. 67-80	Formulation tested (Roundup Original, Brazil, 360 g/L glyphosate), not-representative for the renewal.
1291	Toxicology and metabolism	Cattani D. et al.	2014	Mechanisms underlying the neurotoxicity induced by glyphosate-based herbicide in immature rat hippocampus: involvement of glutamate excitotoxicity.	Toxicology (2014), Vol. 320, pp. 34-45	Formulation tested (Roundup Original, Brazil, 360 g/L glyphosate), not-representative for the renewal.
1292	Toxicology and metabolism	Cattelan M. D. P. et al.	2018	Occupational exposure to pesticides in family agriculture and the oxidative, biochemical and hematological profile in this agricultural model	Life Sciences (2018), Vol. 203, pp. 177-183	General pesticide exposures, not glyphosate specific and thus not relevant to the EU renewal of glyphosate.
1293	Toxicology and metabolism	Cavusoglu K. et al.	2011	Protective effect of Ginkgo biloba L. leaf extract against glyphosate toxicity in Swiss albino mice.	Journal of medicinal food (2011), Vol. 14, No. 10, pp. 1263-72	Single dose administration intraperitoneally as well as the protective effect of a Ginkgo biloba extract. This is not representative of glyphosate exposure and therefore not relevant to the renewal.
1294	Toxicology and metabolism	Cermak A. M. M. et al.	2018	Redox imbalance caused by pesticides: a review of OPENTOX-related research.	Arhiv za higijenu rada i toksikologiju (2018), Vol. 69, No. 2, pp. 126-134	A review article of in vitro studies with no new data provided.

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1295	Toxicology and metabolism	Chaufan G. et al.	2014	Glyphosate commercial formulation causes cytotoxicity, oxidative effects, and apoptosis on human cells: differences with its active ingredient.	International journal of toxicology (2014), Vol. 33, No. 1, pp. 29-38	No effects for glyphosate and AMPA, only with formulation tested in an in vitro system. Data not biologically relevant to the renewal.
1296	Toxicology and metabolism	Chlopecka M. et al.	2014	Glyphosate affects the spontaneous motoric activity of intestine at very low doses - in vitro study.	Pesticide biochemistry and physiology (2014), Vol. 113, pp. 25-30	A novel ex-vivo model not relevant to the EU renewal of glyphosate.
1297	Toxicology and metabolism	Chlopecka M. et al.	2017	The effect of glyphosate-based herbicide Roundup and its co-formulant, POEA, on the motoric activity of rat intestine - In vitro study.	Environmental toxicology and pharmacology (2017), Vol. 49, pp. 156-162	Formulation and mixtures of glyphosate and surfactant tested in vitro (Roundup ULTRA 170 SL; 170 g isopropylamine salt/L), Data not biologically relevant to the renewal.
1298	Toxicology and metabolism	Clair E. et al.	2012	A glyphosate-based herbicide induces necrosis and apoptosis in mature rat testicular cells in vitro, and testosterone decrease at lower levels.	Toxicology in vitro (2012), Vol. 26, No. 2, pp. 269-79	This publication is considered not relevant for the risk assessment of glyphosate as a glyphosate formulation (Roundup Bioforce) was used instead of glyphosate for in vitro testing.
1299	Toxicology and metabolism	Clark P. A. et al.	2016	Chronic kidney disease in Nicaraguan sugarcane workers: A historical, medical, environmental analysis and ethical analysis.	Internet Journal of Third World Medicine (2016), Vol. 12, No. 1	This publication is considered not relevant for glyphosate risk assessment because no systematic epidemiological approach was followed. Similarly figures for workers were not reported, nor were exposure patterns observed.
1300	Toxicology and metabolism	Clausing P.	2017	Cancer risk by glyphosate: The "Weight of Evidence Approach" of BfR. Krebsgefahr durch Glyphosat: Der "Weight of Evidence Approach" des BfR.	Umweltmedizin Hygiene Arbeitsmedizin (2017), Vol. 22, No. 1, pp. 27-34	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work.
1301	Toxicology and metabolism	Clausing P. et al.	2018	Pesticides and public health: an analysis of the regulatory approach to assessing the carcinogenicity of glyphosate in the European Union.	Journal of epidemiology and community health (2018), Vol. 72, No. 8, pp. 668-672	No new data, a commentary article therefore not relevant for the renewal of glyphosate.
1302	Toxicology and metabolism	Coalova I. et al.	2014	Influence of the spray adjuvant on the toxicity effects of a glyphosate formulation.	Toxicology in vitro (2014), Vol. 28, No. 7, pp. 1306-11	The formulation tested in vitro (Atanor, Argentina; 48% glyphosate isopropylamine salt) is not therepresentative formulation for the renewal.
1303	Toxicology and metabolism	Coon E. A. et al.	2019	Conjugal multiple system atrophy: Chance, shared risk factors, or evidence of transmissibility?.	Parkinsonism and Related Disorders (2019), Vol. 67, pp. 10-13	Glyphosate use is one of many potential environmental factors considered as a cause for multiple system atrophy, with no specific information provided.
1304	Toxicology and metabolism	Cortinovis C. et al.	2015	Glyphosate-surfactant herbicide poisoning in domestic animals: an epidemiological survey.	The Veterinary record (2015), Vol. 176, No. 16, pp. 413	Acute poisoning in animals, not relevant for the renewal.
1305	Toxicology and metabolism	Coullery R. P. et al.	2016	Neuronal development and axon growth are altered by glyphosate through a WNT non-canonical signaling pathway.	Neurotoxicology (2016), Vol. 52, pp. 150-61	High in vitro doses >10 mM of glyphosate, therefore not representative of use/exposure and not relevant for the renewal.
1306	Toxicology and metabolism	Dar M. A. et al.	2015	Single and interactive toxic potential of Roundup and ammonium nitrate on Haemato-biochemical parameters in wistar rats	Journal of Cell and Tissue Research (2015), Vol. 15, No. 3, pp. 5295-5299	High dose of Glyphosate based herbicide administered to rats in drinking water. As this is not the representative formulation, the article is not relevant to the renewal.

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1307	Toxicology and metabolism	Dar M. A. et al.	2018	Sub-acute oral toxicity of Roundup® and ammonium nitrate with special reference to oxidative stress indices in wistar rats.	Indian Journal of Animal Research (2018), Vol. 52, No. 3, pp. 405-408	Formulation tested Roundup® (Glyphosate 41 % EC, SD Fine Chemicals Mumbai, India); this is not representative for the EU renewal.
1308	Toxicology and metabolism	Dar M. A. et al.	2019	Effect of Repeated Oral Administration of Roundup(R) and Ammonium Nitrate on Liver of Wistar Rats.	Proceedings of the Indian National Science Academy Part B Biological Sciences (2019), Vol. 89, No. 2, pp. 505-510	Formulation tested (Roundup, 41% EC) which is not the representative formulation used in the renewal.
1309	Toxicology and metabolism	Dardiotis E. et al.	2019	Pesticide exposure and cognitive function: Results from the Hellenic Longitudinal Investigation of Aging and Diet (HELIAD)	Environmental Research (2019), Vol. 177, pp. 108632	This publication is considered not relevant for the risk assessment of glyphosate because exposure to glyphosate is not documented.
1310	Toxicology and metabolism	de Adad L. M. M. et al.	2015	Occupational exposure of workers to pesticides: Toxicogenetics and susceptibility gene polymorphisms.	Genetics and Molecular Biology (2015), Vol. 38, No. 3, pp. 308-315	Not specific to glyphosate and therefore not relevant to the renewal.
1311	Toxicology and metabolism	de Aguiar L. M. et al.	2016	Glyphosate-based herbicide exposure causes antioxidant defence responses in the fruit fly Drosophila melanogaster.	Comparative biochemistry and physiology. Toxicology & pharmacology (2016), Vol. 185-186, pp. 94-101	Tested formulation (Roundup Original) for cellular mechanisms in houseflies, not directly relevant to human health risk assessment in the EU renewal of glyphosate.
1312	Toxicology and metabolism	de Castilhos Ghisi N. et al.	2013	Genotoxic effects of the herbicide Roundup® in the fish Corydoras paleatus (Jenyns 1842) after short-term, environmentally low concentration exposure	Environmental monitoring and assessment (2013), Vol. 185, No. 4, pp. 3201-7	Glyphosate based herbicide tested in aquatic species. As this is not the representative formulation, the article is not relevant to the renewal.
1313	Toxicology and metabolism	de Melo M. I. A. et al.	2018	Glyphosate-based herbicide induces toxic effects on human adipose-derived mesenchymal stem cells grown in human plasma.	Comparative Clinical Pathology (2018), Vol. 27, No. 4, pp. 989-1000	Glyphosate based herbicide tested in an in vitro system.
1314	Toxicology and metabolism	de Liz Oliveira Cavalli V. L. et al.	2013	Roundup disrupts male reproductive functions by triggering calcium-mediated cell death in rat testis and Sertoli cells.	Free radical biology & medicine (2013), Vol. 65, pp. 335-46	Formulation tested in vitro was Roundup Original, 360 g/L, a.e., Brazil. As this is not the representative formulation, the article is not relevant to the renewal.
1315	Toxicology and metabolism	de Moura F. R. et al.	2017	Effects of glyphosate-based herbicide on pintado da Amazonia: Hematology, histological aspects, metabolic parameters and genotoxic potential.	Environmental toxicology and pharmacology (2017), Vol. 56, pp. 241-248	The effects of high doses of Glyphosate based herbicide to aquatic species was assessed. As this is not the representative formulation, the article is not relevant to the renewal.
1316	Toxicology and metabolism	de Oliveira A. F. B. et al.	2019	Investigation of pesticide exposure by genotoxicological, biochemical, genetic polymorphic and in silico analysis	Ecotoxicology and Environmental Safety (2019), 179, 135-142	This publication is considered not relevant for the risk assessment of glyphosate because it is not specific to glyphosate. Focuses on mixtures of pesticides. It is not possible to establish a causal relationship between the biological endpoints assessed and exposure to glyphosate.
1317	Toxicology and metabolism	de Oliveira Joaquim A. et al.	2014	Effects of exposure to glyphosate in male and female mice behavior in pubertal period.	Brazilian Journal of Veterinary Research and Animal Science (2014), Vol. 51, No. 3, pp. 194-203	This publication is considered not relevant for the risk assessment of glyphosate because a formulation (Roundup Transorb) was used instead of glyphosate.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1318	Toxicology and metabolism	de Oliveira Joaquin A. et al.	2012	Behavioral effects of acute glyphosate exposure in male and female Balb/c mice.	Brazilian Journal of Veterinary Research and Animal Science (2012), Vol. 49, No. 5, pp. 367-376	Formulation tested in vivo was Roundup Transorb, 648 g/L of isopropylamine salt, 480 g/L a.e., Brazil. As this is not the representative formulation, the article is not relevant to the renewal.
1319	Toxicology and metabolism	de Ribeiro Sena T. R. et al.	2019	[High frequency hearing among rural workers exposed to pesticides] Audicao em altas frequencias em trabalhadores rurais expostos a agrototoxicos	Ciencia & saude coletiva (2019), Vol. 24, No. 10, pp. 3923-3932	No glyphosate specific data, confounded due to multiple pesticide uses therefore cannot be used in the renewal.
1320	Toxicology and metabolism	de Souza J. S. et al.	2019	Maternal glyphosate-based herbicide exposure alters antioxidant-related genes in the brain and serum metabolites of male rat offspring.	Neurotoxicology (2019), Vol. 74, pp. 121-131	Formulated product tested was Glyphosate Roundup Transorb; Monsanto of Brazil Ltda, São Paulo, Brazil. As this is not the representative formulation, the article is not relevant to the renewal.
1321	Toxicology and metabolism	de Souza J. S. et al.	2017	Perinatal exposure to glyphosate-based herbicide alters the thyrotrophic axis and causes thyroid hormone homeostasis imbalance in male rats.	Toxicology (2017), Vol. 377, pp. 25-37	This publication is considered not relevant for the risk assessment of glyphosate because a glyphosate formulation (Roundup Transorb) was used instead of glyphosate.
1322	Toxicology and metabolism	Defarge N. et al.	2018	Toxicity of formulators and heavy metals in glyphosate-based herbicides and other pesticides.	Toxicology reports (2018), Vol. 5, pp. 156-163	This paper is deemed not relevant as a non-representative formulation was tested as opposed to glyphosate.
1323	Toxicology and metabolism	Deshmukh U. S. et al.	2013	Effect of acute exposure of glyphosate herbicide, on wistar rats with reference to haematology and biochemical analysis	Bioscan (2013), Vol. 8, No. 2, pp. 381-383	Formulation tested in vivo at excessively high dose of 4000 mg/kg/day for 7 days and is therefore not applicable to the EU renewal.
1324	Toxicology and metabolism	Dhananjayan V. et al.	2019	Assessment of genotoxicity and cholinesterase activity among women workers occupationally exposed to pesticides in tea garden	Mutation Research, Genetic Toxicology and Environmental Mutagenesis (2019), Vol. 841, pp. 1-7	General pesticide exposure evaluation, not glyphosate specific therefore not applicable to the EU renewal.
1325	Toxicology and metabolism	Dhanarajam Y. et al.	2013	Haemato-biochemical studies on glyphosate induced toxicity in rats.	Journal of Interacademia (2013), Vol. 17, No. 3, pp. 512-517	Formulation tested in vivo, via oral gavage at high doses of 400 and 800 mg/kg/day for 28 days (Roundup, 41% isopropylamine salt). As this is not the representative formulation, the article is not relevant to the renewal.
1326	Toxicology and metabolism	Diaz-Criollo S. et al.	2019	Chronic pesticide mixture exposure including paraquat and respiratory outcomes among Colombian farmers.	Industrial health (2019), Vol. 58, No. 1, pp. 15-21	Mixtures paper, focused on paraquat mixtures therefore not relevant to the EU renewal.
1327	Toxicology and metabolism	Schrenk D.	2018	What is the meaning of 'A compound is carcinogenic'?	Toxicology reports (2018), Vol. 5, pp. 504-511	This publication is considered not relevant for the risk assessment of glyphosate as it concerns the classification of carcinogens in general and not glyphosate in particular.
1328	Toxicology and metabolism	Diken M. E. et al.	2017	In vitro effects of some pesticides on glutathione-S transferase activity.	Fresenius Environmental Bulletin (2017), Vol. 26, No. 12A, pp. 8023-8029	Formulations tested at excessively high in vitro doses in the mM range and is therefore not applicable to the EU renewal.
1329	Toxicology and metabolism	Dimpfel W. et al.	2018	Effect of Zembrin® and four of its alkaloid constituents on electric excitability of the rat hippocampus.	Journal of Ethnopharmacology (2018), Vol. 223, pp. 135-141	AMPA described in the paper is not aminomethylphosphonic acid, rather α-amino-3-hydroxy-5-methyl-4-isoxazole-propionic acid, therefore not relevant to the renewal.

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1330	Toxicology and metabolism	Djalietti R. et al.	2019	The role of exposure to pesticides in the etiology of Parkinson's disease: a 18F-DOPA positron emission tomography study.	Journal of Neural Transmission (2019), Vol. 126, No. 2, pp. 159-166	A general pesticides paper which does not present any new glyphosate specific data. Therefore not relevant to the renewal.
1331	Toxicology and metabolism	dos Santos K. C. et al.	2014	Genotoxic and biochemical effects of atrazine and Roundup®), alone and in combination, on the Asian clam Corbicula fluminea.	Ecotoxicology and environmental safety (2014), Vol. 100, pp. 7-14	A glyphosate based herbicide was tested on an aquatic invertebrate. As this is not the representative formulation, the article is not relevant to the renewal.
1332	Toxicology and metabolism	Douwes J. et al.	2018	Carcinogenicity of glyphosate: why is New Zealand's EPA lost in the weeds?	The New Zealand medical journal (2018), Vol. 131, No. 1472, pp. 82-89	Opinion article with no new data relevant to the renewal of glyphosate.
1333	Toxicology and metabolism	Dumukhalska Y. B. et al.	2018	Protective effect of the cisteile-histidile-tyrosile-histidile- isoleucine against heavy metal and glyfosate induced on content of lipid peroxidation products and reactive oxygen species in different age rats	Medichna ta Klinichna Khimiya (2018), No. 2, pp. 77-83	Administered a glyphosate based herbicide to rats for 30 days at 25% of acute oral LD50, this is not a representative way of exposure.
1334	Toxicology and metabolism	Eapen A. et al.	2018	Science, safety, and sanity: hot topics in food toxicology.	Journal of Food Protection (2018), Vol. 81, pp. 24	This paper did not mention glyphosate and is therefore not relevant.
1335	Toxicology and metabolism	Elhalwagy M. E. A. et al.	2014	Hepatotoxicity induced by glyphosate-based herbicide baron in albino rats.	Journal of Animal and Veterinary Advances (2014), Vol. 13, No. 5, pp. 322-329	Formulation tested in vivo (Baron, 48% glyphosate, Egypt). As this is not the representative formulation, the article is not relevant to the renewal.
1336	Toxicology and metabolism	Elie-Caille C. et al.	2010	Morphological damages of a glyphosate-treated human keratinocyte cell line revealed by a micro- to nanoscale microscopic investigation.	Cell biology and toxicology (2010), Vol. 26, No. 4, pp. 331-9	This publication is considered not relevant for the risk assessment of glyphosate as the test concentrations used were in the range of 10-70 mM (all >> 1mM) and therefore considered physiologically irrelevant.
1337	Toxicology and metabolism	Emmanuel A. G. et al.	2015	Protective potential of betulinic acid against glyphosate-induced toxicity in testis and epididymis of male wistar rats	International Journal of Current Research (2015), Vol. 7, No. 6, pp. 16650-16660	Formulation tested in vivo (described as "commercial glyphosate"). As this is not the representative formulation, the article is not relevant to the renewal.
1338	Toxicology and metabolism	Erhumwunse N. O. et al.	2014	Histopathological changes in the brain tissue of Africa catfish exposure to glyphosate herbicide.	Journal of Applied Sciences and Environmental Management (2014), Vol. 18, No. 2, pp. 275-280	Formulation tested (commercial formulation of glyphosate (360 g/41 w.wt IPA). As this is not the representative formulation, the article is not relevant to the renewal.
1339	Toxicology and metabolism	Fagan J. et al.	2015	The Seralini affair: degeneration of Science to Re-Science?	Environmental Sciences Europe (2015), Vol. 27, No. 19	Commentary from the Seralini paper retraction therefore not relevant to the renewal.
1340	Toxicology and metabolism	Faria M. A.	2015	Glyphosate, neurological diseases - and the scientific method	Surgical neurology international (2015), Vol. 6, pp. 132	A letter providing comments on Samsel and Seneff (ref 2324). Therefore not relevant for the risk assessment of glyphosate.
1341	Toxicology and metabolism	Feng P. et al.	2019	A review on gut remediation of selected environmental contaminants: Possible roles of probiotics and gut microbiota.	Nutrients (2019), Vol. 11, No. 1, pp. 22	A literature review on pollutants, probiotics and gut microbes therefore not relevant for the risk assessment of glyphosate.
1342	Toxicology and metabolism	Flandroy L. et al.	2018	The impact of human activities and lifestyles on the interlinked microbiota and health of humans and of ecosystems.	Science of the Total Environment (2018), Vol. 627, pp. 1018-1038	General discussion of microbiota and proposal for research prioritization therefore not relevant for the risk assessment of glyphosate.

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1343	Toxicology and metabolism	Fluegge K. et al.	2017	Exploring the potential confounder of nitrogen fertilizers in the relationship between pesticide exposures and risk of leukemia: a Poisson regression with two-way fixed-effects analysis	Chinese Journal of Cancer (2017), Vol. 36, No. 1, pp. 58	Letter to editor, focuses on nitrogen fertilizers and is therefore not relevant for the risk assessment of glyphosate.
1344	Toxicology and metabolism	Fluegge K. et al.	2017	Exposure to ambient PM10 and nitrogen dioxide and ADHD risk: A reply to Min & Min (2017).	Environment International (2017), Vol. 103, pp. 109-110	No new data, therefore not relevant for the risk assessment of glyphosate.
1345	Toxicology and metabolism	Fluegge K. R. et al.	2015	Glyphosate Use Predicts ADHD Hospital Discharges in the Healthcare Cost and Utilization Project Net (HCUPnet): A Two-Way Fixed-Effects Analysis.	PLoS one (2015), Vol. 10, No. 8, pp. e0133525	Retracted publication, therefore not relevant for the risk assessment of glyphosate.
1346	Toxicology and metabolism	Ford B. et al.	2017	Mapping Proteome-wide Targets of Glyphosate in Mice.	Cell chemical biology (2017), Vol. 24, No. 2, pp. 133-140	This publication is considered not relevant because intraperitoneal injection was used which is an inappropriate route of administration for the occupational and food risk assessment of glyphosate.
1347	Toxicology and metabolism	Freddo N. et al.	2019	Isoflavone quantitation in soy milk: Genistein content and its biological effect.	CyTA-Journal of Food (2019), Vol. 17, No. 1, pp. 20-24	It mainly concerns the development of a bioanalytical method for the analysis of genistein and glyphosate in soya milk. The biological end-point selected (anxiety) and the test system used (elevated plus maze test) are not acceptable for regulatory use.
1348	Toxicology and metabolism	Frescura V. D. et al.	2013	Post-treatment with plant extracts used in Brazilian folk medicine caused a partial reversal of the antiproliferative effect of glyphosate in the Allium cepa test	Biocell (2013), Vol. 37, No. 2, pp. 23-8	Glyphosate used as an un-validated positive control in assay and is therefore not relevant for the risk assessment of glyphosate.
1349	Toxicology and metabolism	Fu H. et al.	2019	Toxicity of glyphosate in feed for weanling piglets and the mechanism of glyphosate detoxification by the liver nuclear receptor CAR/PXR pathway.	Journal of hazardous materials (2019), Vol. 387, pp. 121707	Glyphosate based herbicide dosed to weanling piglets. As this is not the representative formulation, the article is not relevant to the renewal.
1350	Toxicology and metabolism	Fuso A. et al.	2019	CpG and non-CpG methylation in the diet-epigenetics-neurodegeneration connection.	Current Nutrition Reports (2019), Vol. 8, No. 2, pp. 74-82	A review paper that mentions glyphosate once without any data. Therefore is not relevant for the risk assessment of glyphosate.
1351	Toxicology and metabolism	Gallegos C. E. et al.	2016	Exposure to a glyphosate-based herbicide during pregnancy and lactation induces neurobehavioral alterations in rat offspring.	Neurotoxicology (2016), Vol. 53, pp. 20-28	Formulation tested in vivo via drinking water (Glifloglex, 48% glyphosate, Gleba S.R.L., Argentina). As this is not the representative formulation, the article is not relevant to the renewal.
1352	Toxicology and metabolism	Gallegos C. E. et al.	2018	Perinatal Glyphosate-Based Herbicide Exposure in Rats Alters Brain Antioxidant Status, Glutamate and Acetylcholine Metabolism and Affects Recognition Memory.	Neurotoxicity research (2018), Vol. 34, No. 3, pp. 363-374	Formulation tested (in Argentina, Glifloglex® from Gleba S.R.L., 48 g isopropylamine salt per 100 cm ³ ; 35.6% w/v a.e.). As this is not the representative formulation, the article is not relevant to the renewal.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1353	Toxicology and metabolism	Gasnier C. et al.	2011	Defined plant extracts can protect human cells against combined xenobiotic effects.	Journal of occupational medicine and toxicology (2011), Vol. 6, No. 1, pp. 3	Protective mechanism of plant extracts upon various chemical exposure (RoundUp residues, Bisphenol A, Atrazine). As this is not the representative formulation, the article is not relevant to the renewal.
1354	Toxicology and metabolism	Gasnier C. et al.	2010	Dig1 protects against cell death provoked by glyphosate-based herbicides in human liver cell lines	Journal of Occupational Medicine and Toxicology (2010), Vol. 5, pp. 29-29	Protective mechanism of plant extracts upon various chemical exposure (RoundUp residues, Bisphenol A, Atrazine). As this is not the representative formulation, the article is not relevant to the renewal.
1355	Toxicology and metabolism	Gencer N. et al.	2011	In vitro effects of some pesticides on PON1Q192 and PON1R192 isoenzymes from human serum.	Fresenius Environmental Bulletin (2011), Vol. 20, No. 3, pp. 590-596	Test material identity is entirely missing and the claim presented is dubious: "The pesticides were of commercial origin, and at the highest available purity level (99%)." Therefore it is not relevant to the renewal of glyphosate.
1356	Toxicology and metabolism	Gentile N. et al.	2012	Micronucleus assay as a biomarker of genotoxicity in the occupational exposure to agrochemicals in rural workers	Bulletin of Environmental Contamination and Toxicology (2012), Vol. 88, No. 6, pp. 816-822	This paper does not contain glyphosate specific data and is therefore not relevant to the renewal of glyphosate.
1357	Toxicology and metabolism	George J. et al.	2010	Studies on glyphosate-induced carcinogenicity in mouse skin: a proteomic approach.	Journal of proteomics (2010), Vol. 73, No. 5, pp. 951-64	The test material was a glyphosate-based formulation and not the reference formulation MON 52276. As this is not the representative formulation, the article is not relevant to the renewal.
1358	Toxicology and metabolism	George J. et al.	2013	Emptying of Intracellular Calcium Pool and Oxidative Stress Imbalance Are Associated with the Glyphosate-Induced Proliferation in Human Skin Keratinocytes HaCaT Cells.	ISRN dermatology (2013), Vol. 2013, pp. 825180	Formulation tested in vivo via dermal application (Roundup Original, 41% isopropylamine salt, 36% a.e.). Relevance of proteomic measurements not validated and as this is not the representative formulation, the article is not relevant to the renewal.
1359	Toxicology and metabolism	Gomez A. L. et al.	2019	Male mammary gland development and methylation status of estrogen receptor alpha in Wistar rats are modified by the developmental exposure to a glyphosate-based herbicide.	Molecular and cellular endocrinology (2019), Vol. 481, pp. 14-25	Formulation tested (Magnum Super II, Grupo Agros SA; 66.2% K salt, 54% a.e.). As this is not the representative formulation, the article is not relevant to the renewal.
1360	Toxicology and metabolism	Gomez-Arroyo S. et al.	2013	Assessing the genotoxic risk for Mexican children who are in residential proximity to agricultural areas with intense aerial pesticide applications	Revista Internacional de Contaminacion Ambiental (2013), Vol. 29, No. 3, pp. 217-225	This study does not present any glyphosate specific information and is therefore not relevant to the renewal.
1361	Toxicology and metabolism	Goussard P. et al.	2019	Corrosive injury of the trachea in children.	Clinical Case Reports (2019), Vol. 7, No. 10, pp. 1999-2003	One of the cases cited in the article swallowed an unknown amount of glyphosate formulation. No other mention of glyphosate. Focus of article on corrosion of trachea, not glyphosate and is therefore not relevant to the renewal
1362	Toxicology and metabolism	Gress S. et al.	2016	Dig1 protects against locomotor and biochemical dysfunctions provoked by Roundup.	BMC complementary and alternative medicine (2016), Vol. 16, pp. 234	Glyphosate based herbicide administered to rats in drinking water. As this is not the representative formulation, the article is not relevant to the renewal.

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1363	Toxicology and metabolism	Gress S. et al.	2015	Cardiotoxic Electrophysiological Effects of the Herbicide Roundup® in Rat and Rabbit Ventricular Myocardium In Vitro.	Cardiovascular toxicology (2015), Vol. 15, No. 4, pp. 324-35	Roundup Ultra formulation tested in vitro. As this is not the representative formulation, the article is not relevant to the renewal.
1364	Toxicology and metabolism	Guerrero Schimpf M. et al.	2018	Glyphosate-based herbicide enhances the uterine sensitivity to estradiol in rats.	The Journal of endocrinology (2018), Vol. 239, No. 2, pp 197-213	Non representative formulation tested instead of glyphosate. As this is not the representative formulation, the article is not relevant to the renewal.
1365	Toxicology and metabolism	Guerrero Schimpf M. et al.	2017	Neonatal exposure to a glyphosate based herbicide alters the development of the rat uterus.	Toxicology (2017), Vol. 376, pp. 2-14	Formulation tested in vivo via subcutaneous injection (Roundup FULL II, 66.2% potassium salt). As this is not the representative formulation, the article is not relevant to the renewal.
1366	Toxicology and metabolism	Guha N. et al.	2013	Characterization of residential pesticide use and chemical formulations through self-report and household inventory: The northern California childhood leukemia study.	Environmental Health Perspectives (2013), Vol. 121, No. 2, pp. 276-282	No data relevant to glyphosate human health effects and exposure to glyphosate therefore not relevant to the risk assessments.
1367	Toxicology and metabolism	Guilherme S. et al.	2012	DNA damage in fish (Anguilla anguilla) exposed to a glyphosate-based herbicide -- elucidation of organ-specificity and the role of oxidative stress.	Mutation research (2012), Vol. 743, No. 1-2, pp. 1-9	Glyphosate based herbicide tested in eels, surfactants present in the formulation are known to damage gills. As this is not the representative formulation, the article is not relevant to the renewal.
1368	Toxicology and metabolism	Guilherme S. et al.	2014	Are DNA-damaging effects induced by herbicide formulations (Roundup® and Garlon®) in fish transient and reversible upon cessation of exposure?	Aquatic toxicology (2014), Vol. 155, pp. 213-21	Glyphosate based herbicide tested in aquatic species. As this is not the representative formulation, the article is not relevant to the renewal.
1369	Toxicology and metabolism	Gunatilake S. et al.	2019	Glyphosate's Synergistic Toxicity in Combination with Other Factors as a Cause of Chronic Kidney Disease of Unknown Origin.	International journal of environmental research and public health (2019), Vol. 16, No. 15	This publication is considered not relevant for the risk assessment of glyphosate because it does not present concrete epidemiological data on a possible association between chronic kidney disease and a synergistic effect of glyphosate with other environmental factors such as heavy metals.
1370	Toxicology and metabolism	Guyton K. Z. et al.	2015	Carcinogenicity of tetrachlorovinphos, parathion, malathion, diazinon, and glyphosate	Lancet Oncology (2015), Vol. 16, no. 5, pp. 490-491	This review is considered not relevant for the risk assessment of glyphosate because it does not contain a detailed report and discussion of experimental results. It only concerns a brief summary of the IARC evaluation of glyphosate which is not corroborated by regulatory agencies.
1371	Toxicology and metabolism	Haltwachs S. et al.	2016	Assessment of ABCG2-mediated transport of pesticides across the rabbit placenta barrier using a novel MDCKII in vitro model.	Toxicology and applied pharmacology (2016), Vol. 305, pp. 66-74	No adverse effects, and therefore there is no relevance to the human health risk assessment.
1372	Toxicology and metabolism	Hamdaoui L. et al.	2016	Nephrotoxicity of Kalach 360 SL: biochemical and histopathological findings.	Toxicology mechanisms and methods (2016), Vol. 26, No. 9, pp. 685-691	Formulation tested (Kalach 360 SL) in vivo. As this is not the representative formulation, the article is not relevant to the renewal.
1373	Toxicology and metabolism	Hamdaoui L. et al.	2019	Sub-chronic exposure to Kalach 360 SL-induced damage in rats' liver and hematological system.	Environmental science and pollution research international (2019), Vol. 26, No. 36, pp. 36634-36646	Glyphosate based herbicide dosed to rats. As this is not the representative formulation, the article is not relevant to the renewal.

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1374	Toxicology and metabolism	Handaoui L. et al.	2018	Subchronic exposure to kalach 360 SL-induced endocrine disruption and ovary damage in female rats.	Archives of physiology and biochemistry (2018), Vol. 124, No. 1, pp. 27-34	Formulation tested (KL, Arysta Life Science, Fouchana Tunisia; isopropylamine salt 41.5% surfactant, 15.5%). As this is not the representative formulation, the article is not relevant to the renewal.
1375	Toxicology and metabolism	Han J. et al.	2016	Determination of glyphosate and its metabolite in emergency room in Korea.	Forensic science international (2016), Vol. 265, pp. 41-6	Analytical method development in human blood therefore not relevant to the glyphosate risk assessment.
1376	Toxicology and metabolism	Hao Y. et al.	2019	Roundup confers cytotoxicity through DNA damage and Mitochondria-Associated apoptosis induction	Environmental Pollution (2019), Vol. 252, No. Part_A, pp. 917-923	This publication is considered not relevant for the risk assessment of glyphosate because a glyphosate formulation was tested in vitro instead of glyphosate.
1377	Toxicology and metabolism	Hao Y. et al.	2019	Evaluation of the cytotoxic effects of glyphosate herbicides in human liver, lung, and nerve	Journal of Environmental Science and Health, Part B Pesticides, Food Contaminants, and Agricultural Wastes (2019), Vol. 54, No. 9, pp. 737-744	This publication is considered not relevant for the risk assessment of glyphosate because glyphosate concentrations were tested in vitro that are physiologically not feasible in in vivo experimental models (> 1 mM).
1378	Toxicology and metabolism	Haskovic E. et al.	2016	Effects of Glyphosate on Enzyme Activity and Serum Glucose in Rats <i>Rattus norvegicus</i>	Acta veterinaria (2016), Vol. 66, No. 2, pp. 214-221	Only liver enzymes measured after 15 days dermal application of formulated product (Total 480 SL, Croatia), which is not a representative formulation for the renewal.
1379	Toxicology and metabolism	Hendges C. et al.	2019	Human intoxication by agrochemicals in the region of South Brazil between 1999 and 2014.	Journal of Environmental Science and Health Part B Pesticides Food Contaminants and Agricultural Wastes (2019), Vol. 54, No. 4, pp. 219-225	This publication is considered not relevant for the risk assessment of glyphosate because it does not address specifically glyphosate exposure but pesticide poisoning in general.
1380	Toxicology and metabolism	Heritier L. et al.	2017	Oxidative stress induced by glyphosate-based herbicide on freshwater turtles.	Environmental toxicology and chemistry (2017), Vol. 36, No. 12, pp. 3343-3350	Glyphosate based herbicide tested on turtles. As this is not the representative formulation, the article is not relevant to the renewal.
1381	Toxicology and metabolism	Hernandez-Plata I. et al.	2015	The herbicide glyphosate causes behavioral changes and alterations in dopaminergic markers in male Sprague-Dawley rat.	Neurotoxicology (2015), Vol. 46, pp. 79-91	This publication is considered not relevant because of the use of intraperitoneal injection which is an inappropriate route of exposure for the occupational and food risk assessment of glyphosate.
1382	Toxicology and metabolism	Herrera-Valdes R. et al.	2019	Epidemic of chronic kidney disease of nontraditional etiology in El Salvador: Integrated health sector action and south-south cooperation.	MEDICC Review (2019), Vol. 21, No. 3, pp. 46-52	No data specific to glyphosate. Evaluated handling of agrochemicals as a risk factor, rather than individual pesticides.
1383	Toxicology and metabolism	Heu C. et al.	2012	Glyphosate-induced stiffening of HaCaT keratinocytes, a Peak Force Tapping study on living cells.	Journal of structural biology (2012), Vol. 178, No. 1, pp. 1-7	This publication is considered not relevant for the risk assessment of glyphosate because glyphosate concentrations have been used in vitro that cannot be attained in in vivo experimental models (> 1 mM).
1384	Toxicology and metabolism	Heu C. et al.	2012	A step further toward glyphosate-induced epidermal cell death: involvement of mitochondrial and oxidative mechanisms.	Environmental toxicology and pharmacology (2012), Vol. 34, No. 2, pp. 144-153	This publication is considered not relevant for the risk assessment of glyphosate because the cytotoxicity of glyphosate to epidermal cells was tested in the mM range whereas contact of epidermal cells to glyphosate formulations is always combined with surfactants which produce cytotoxicity in the sub-mM range.
1385	Toxicology and metabolism	Hofmann J. N. et al.	2015	The Biomarkers of Exposure and Effect in Agriculture (BEEA) Study: Rationale, Design, Methods, and Participant Characteristics	Journal of toxicology and environmental health. Part A (2015), Vol. 78, No. 21-22, pp. 1338-47	No endpoints for glyphosate, only relative use rates therefore cannot be used in the risk assessments.

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1386	Toxicology and metabolism	Hong S. et al.	2012	Cellular Toxicity of Surfactants Used as Herbicide Additives	JOURNAL OF KOREAN MEDICAL SCIENCE (2012), Vol. 27, No. 1, pp. 3-9	This study does not present any glyphosate specific information and cannot therefore be used in risk assessments.
1387	Toxicology and metabolism	Hong Y. et al.	2017	Effects of glyphosate on immune responses and haemocyte DNA damage of Chinese mitten crab, <i>Eriocheir sinensis</i> .	Fish & shellfish immunology (2017), Vol. 71, pp. 19-27	This paper discusses the effects of high doses of a glyphosate based herbicide on crabs. As this is not the representative formulation, the article is not relevant to the renewal.
1388	Toxicology and metabolism	Hsu C. et al.	2013	Can mortality from agricultural pesticide poisoning be predicted in the emergency department? Findings from a hospital-based study in eastern Taiwan	Tzu Chi Medical Journal (2013), Vol. 25, no. 1, pp. 32-38	This paper provides a retrospective analysis of poisoning incidents in Taiwan and is therefore not relevant to the renewal of glyphosate.
1389	Toxicology and metabolism	Hulin M. et al.	2014	Assessment of infant exposure to food chemicals: the French Total Diet Study design	Food Additives & Contaminants, Part A: Chemistry, Analysis, Control, Exposure & Risk Assessment (2014), Vol. 31, No. 7, pp. 1226-1239	This paper describes the assessment process of infant exposure to food chemicals. No glyphosate data was presented in the report, and is therefore not relevant to the renewal process.
1390	Toxicology and metabolism	Hussain R. et al.	2019	Exposure to Sub-Acute Concentrations of Glyphosate Induce Clinico-Hematological, Serum Biochemical and Genotoxic Damage in Adult Cockerels	PAKISTAN VETERINARY JOURNAL (2019), Vol. 39, No. 2, pp. 181-186	The glyphosate based herbicide used in the paper is not an EU representative formulation and is therefore not relevant to the renewal. Furthermore, the product was administered via gavage to avian species.
1391	Toxicology and metabolism	Hutter H. et al.	2018	Cytotoxic and Genotoxic Effects of Pesticide Exposure in Male Coffee Farmworkers of the Jarabacoa Region, Dominican Republic	INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH (2018), Vol. 15, No. 8	This study did not include any analyses specific for glyphosate, so it is not relevant.
1392	Toxicology and metabolism	IARC	2017	Some organophosphate insecticides and herbicides.	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans (2017), Vol. 112, VII + pp. 452	This paper provides a secondary source of information and is therefore not relevant.
1393	Toxicology and metabolism	Ibrahim A. M. et al.	2019	Toxicological impact of butralin, glyphosate-isopropylammonium and pendimethalin herbicides on physiological parameters of <i>Biomphalaria alexandrina</i> snails	Molluscan research (2019), Vol. 39, No. 3, pp. 224-233	This paper describes an ecotoxicology study of snails exposed to a glyphosate based herbicide. As this is not the representative formulation, the article is not relevant to the renewal.
1394	Toxicology and metabolism	Ikpeme E. V. et al.	2012	Efficacy of ascorbic acid in reducing glyphosate-induced toxicity in rats.	British Biotechnology Journal (2012), Vol. 2, No. 3, pp. 157-168	The formulation tested in vivo is not described. It is not sure what was tested and therefore the effect cannot be attributed to glyphosate.
1395	Toxicology and metabolism	Ilyushina N. A. et al.	2019	Applicability of the Ames test and micronucleus test in vivo for the evaluation of the equivalence of pesticide technical grade active ingredients compared to original active substances	Gigiena i Sanitariya (2019), No. 2, pp. 219-224	Technical grade glyphosate was used as positive control in an assay within this paper. As this is not the representative formulation, the article is not relevant to the renewal.
1396	Toxicology and metabolism	Ingaramo P. I. et al.	2019	Acute uterine effects and long-term reproductive alterations in postnatally exposed female rats to a mixture of commercial formulations of endosulfan and glyphosate.	Food and chemical toxicology (2019), Vol. 134, pp. 110832	A glyphosate based herbicide was dosed to rats in this report. As this is not the representative formulation, the article is not relevant to the renewal.

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1397	Toxicology and metabolism	Ingaramo P. I. et al.	2017	Neonatal exposure to a glyphosate-based herbicide alters uterine decidualization in rats.	Reproductive toxicology (2017), Vol. 73, pp. 87-95	Formulation tested in vivo via sub-cutaneous injection (undisclosed brand, 66.2% potassium salt; 54% glyphosate acid). As this is not the representative formulation, the article is not relevant to the renewal.
1398	Toxicology and metabolism	Ingaramo P. I. et al.	2016	Effects of neonatal exposure to a glyphosate-based herbicide on female rat reproduction.	Reproduction (2016), Vol. 152, No. 5, pp. 403-15	A glyphosate based herbicide formulation was tested in vivo (66.2%, potassium salt). As this is not the representative formulation, the article is not relevant to the renewal.
1399	Toxicology and metabolism	Intranuovo G. et al.	2018	Assessment of DNA damages in lymphocytes of agricultural workers exposed to pesticides by comet assay in a cross-sectional study	Biomarkers (2018), Vol. 23, No. 5, pp. 462-473	General pesticide exposure evaluation, not glyphosate specific. Therefore this article is not relevant to the glyphosate renewal process.
1400	Toxicology and metabolism	Iummato M. M. et al.	2017	Effect of glyphosate acid on biochemical markers of periphyton exposed in outdoor mesocosms in the presence and absence of the mussel <i>Limnoperna fortunei</i> .	Environmental toxicology and chemistry (2017), Vol. 36, No. 7, pp. 1775-1784	The end-points described in this study are not relevant to human health risk assessments in the renewal.
1401	Toxicology and metabolism	Jayasumana C.	2019	Chronic Interstitial Nephritis in Agricultural Communities (CINAC) in Sri Lanka	SEMINARS IN NEPHROLOGY (2019), Vol. 39, No. 3, pp. 278-283	There is no evaluation of glyphosate exposure with any disease outcome presented in this paper. Therefore it is not relevant to the renewal.
1402	Toxicology and metabolism	Jayasumana C. et al.	2015	Drinking well water and occupational exposure to Herbicides is associated with chronic kidney disease, in Padavi-Sripura, Sri Lanka.	Environmental health (2015), Vol. 14, pp. 6	This study was performed in Sri Lanka and is therefore not relevant to the EU.
1403	Toxicology and metabolism	Jayasumana C. et al.	2015	Phosphate fertilizer is a main source of arsenic in areas affected with chronic kidney disease of unknown etiology in Sri Lanka.	SpringerPlus (2015), Vol. 4, pp. 90	No data on glyphosate is presented, and is therefore not relevant to the renewal dossier.
1404	Toxicology and metabolism	Ji H. et al.	2018	Differential microRNA expression in the prefrontal cortex of mouse offspring induced by glyphosate exposure during pregnancy and lactation.	Experimental and therapeutic medicine (2018), Vol. 15, No. 3, pp. 2457-2467	In this paper a glyphosate based formulation was tested, (purchased in China) and containing 48% IPA salt, and 35.6% a.e. Furthermore a glyphosate-based formulation (marketed in China) was used instead of glyphosate in an in vivo assay in mice with the end-points measured not suitable for risk assessment (differential microRNA expression in the prefrontal cortex).
1405	Toxicology and metabolism	Jiang X. et al.	2018	A commercial Roundup formulation induced male germ cell apoptosis by promoting the expression of XAF1 in adult mice	Toxicology Letters (2018), Vol. 296, pp. 163-172	In this study, a Roundup formulation was administered via gavage to adult male mice. As this is not the representative formulation, the article is not relevant to the renewal.
1406	Toxicology and metabolism	Kamata R. et al.	2018	Agonistic effects of diverse xenobiotics on the constitutive androstane receptor as detected in a recombinant yeast-cell assay	Toxicology In Vitro (2018), Vol. 46, pp. 335-349	This paper presents yeast cell assay validation. Glyphosate was not active in the test system and therefore this is not relevant for the renewal.
1407	Toxicology and metabolism	Kamel F. et al.	2012	Pesticide exposure and amyotrophic lateral sclerosis	NeuroToxicology (2012), Vol. 33, No. 3, pp. 457-462	This study does not present correlations of glyphosate use and effect and is not relevant to the renewal.

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1408	Toxicology and metabolism	Karthikraj R. et al.	2019	Widespread occurrence of glyphosate in urine from pet dogs and cats in New York State, USA.	The Science of the total environment (2019), Vol. 659, pp. 790-795	These data do not meet any data requirement under Regulation (EC) 1107/2009 and do not fit within any standard risk assessment under that regulation. The results indicate that exposure to glyphosate may be common in this limited population of companion animals, but at levels which do not raise toxicological concern.
1409	Toxicology and metabolism	Kawada T.	2018	Glyphosate toxicity and carcinogenicity.	EXCLI journal (2018), Vol. 17, pp. 800-801	Letter to editor citing other publications in this review, with no data discussed. Therefore not relevant to the renewal.
1410	Toxicology and metabolism	Khayat C. B. et al.	2013	Assessment of DNA damage in Brazilian workers occupationally exposed to pesticides: a study from Central Brazil.	Environmental Science and Pollution Research International (2013), Vol. 20, No. 10, pp. 7334-7340	No specific analyses was performed for glyphosate in this paper. Furthermore, uncertain sampling from an undefined population and adequate statistical analysis was carried out. No description of a case control study was provided, and the analysis did not evaluate a causal parameter for case control studies (e.g., an odds ratio) or address potential biases in the analysis. Therefore this study is not relevant to the renewal.
1411	Toxicology and metabolism	Kim S. et al.	2019	Pesticides as a risk factor for metabolic syndrome: Population-based longitudinal study in Korea	Molecular & Cellular Toxicology (2019), Vol. 15, No. 4, pp. 431-441	Epidemiology study on pesticide use in general. No information on specific pesticides used in the study was collected and is therefore not applicable to the renewal of glyphosate.
1412	Toxicology and metabolism	Kongtip P. et al.	2018	A cross-sectional investigation of cardiovascular and metabolic biomarkers among conventional and organic farmers in Thailand	International Journal of Environmental Research and Public Health (2018), Vol. 15, No. 11, pp. 2590	This paper presents an evaluation of the effects of pesticide use in general on metabolic biomarkers. The results are not correlated to glyphosate use and cannot be used in glyphosate risk assessments.
1413	Toxicology and metabolism	Koutros S. et al.	2013	Genetic susceptibility loci, pesticide exposure and prostate cancer risk	PLoS One (2013), Vol. 8, No. 4, pp. e58195	This paper does not mention glyphosate and is not relevant.
1414	Toxicology and metabolism	Kubsad D. et al.	2019	Assessment of Glyphosate Induced Epigenetic Transgenerational Inheritance of Pathologies and Sperm Epimutations: Generational Toxicology	Scientific Reports (2019), Vol. 9, No. 1, pp. 1-17	This publication is considered not relevant because the intraperitoneal route of administration is not appropriate for the risk assessment of glyphosate.
1415	Toxicology and metabolism	Kumar V. et al.	2018	Interactions of Acephate, Glyphosate, Monocrotophos and Phorate with Bovine Serum Albumin.	Indian Journal of Pharmaceutical Sciences (2018), Vol. 80, No. 6, pp. 1151-1154	Study of binding to bovine serum albumin by several pesticides. No significant effect of glyphosate in this test system and is therefore not relevant for the risk assessment.
1416	Toxicology and metabolism	Kurenbach B. et al.	2017	Herbicide ingredients change Salmonella enterica sv. Typhimurium and Escherichia coli antibiotic responses.	Microbiology (2017), Vol. 163, pp. 1791-1801	This study describes the addition of high doses of herbicide ingredients to an in vitro system. The reason for the exclusion of in vitro testing of formulations to assess health effects as a result of systemic exposure is the presence of surfactants which produce cell toxicity based on the destabilization of the cell membrane and the mitochondrial membrane thus masking the specific toxicity of glyphosate.
1417	Toxicology and metabolism	Kwiatkowska M. et al.	2014	The effect of metabolites and impurities of glyphosate on human erythrocytes (in vitro).	Pesticide biochemistry and physiology (2014), Vol. 109, pp. 34-43	This publication is considered not relevant for the risk assessment of glyphosate because the in vitro concentrations used are in the mM range and the impurities were tested at the same concentrations as glyphosate which will never occur in practice.
1418	Toxicology and metabolism	Kwiatkowska M. et al.	2016	The Impact of Glyphosate, Its Metabolites and Impurities on	PLoS one (2016), Vol. 11, No. 6, pp. e0156946	This publication is considered not relevant for the risk assessment of glyphosate because the in vitro concentrations

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				Viability, ATP Level and Morphological changes in Human Peripheral Blood Mononuclear Cells.		used are in the mM range and the impurities were tested at the same concentrations as glyphosate which will never occur in practice.
1419	Toxicology and metabolism	Lajmanovich R. C. et al.	2015	Harmful Effects of the Dermal Intake of Commercial Formulations Containing Chlorpyrifos, 2,4-D, and Glyphosate on the Common Toad <i>Rhinella arenarum</i> (Anura: Bufonidae).	Water Air and Soil Pollution (2015), Vol. 226, No. 12, pp. Article No.: 427	This study describes toad dermal exposure to a glyphosate based herbicide. Dermal uptake via moist toad skin was assessed and the end-points identified are not relevant to the human health risk assessment of glyphosate.
1420	Toxicology and metabolism	Landrigan P. J.	2018	Pesticides and Human Reproduction.	JAMA Internal Medicine (2018), Vol. 178, No. 1, pp. 26-27	No data provided in this paper as it is a commentary article. Cannot be used in a glyphosate risk assessment.
1421	Toxicology and metabolism	Larsen K. E. et al.	2016	The herbicide glyphosate is a weak inhibitor of acetylcholinesterase in rats.	Environmental toxicology and pharmacology (2016), Vol. 45, pp. 41-4	This publication is considered not relevant for the risk assessment of glyphosate because the concentrations used for in vitro testing were all in the mM range and not representative of in use conditions.
1422	Toxicology and metabolism	Larsson M. O. et al.	2018	Corrigendum to "Refined assessment and perspectives on the cumulative risk resulting from the dietary exposure to pesticide residues in the Danish population"[Food and Chemical Toxicology 111 (2018) 207-267] [Erratum to document cited in C/AL69:146371]	Food and Chemical Toxicology (2018), Vol. 113, pp. 345-346	Corrigendum to paper correcting calculations not pertaining to glyphosate. Therefore not relevant.
1423	Toxicology and metabolism	Lee H. M. et al.	2012	A case of activated charcoal aspiration treated by early and repeated bronchoalveolar lavage.	Tuberculosis and Respiratory Diseases (2012), Vol. 72, No. 2, pp. 177-181	Effects attributed to activated charcoal aspiration, not glyphosate. Therefore the paper is not relevant to the renewal.
1424	Toxicology and metabolism	Lee J-W. et al.	2015	Common Pesticides Used in Suicide Attempts Following the 2012 Paraquat Ban in Korea.	Journal of Korean medical science (2015), Vol. 30, No. 10, pp. 1517-21	Reports numbers of suicide attempts in South Korea, common pesticide use, not specifically referring to glyphosate.
1425	Toxicology and metabolism	Lermen J. et al.	2018	Pesticide exposure and health conditions among orange growers in Southern Brazil	Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes (2018), Vol. 53, No. 4, pp. 215-221	This publication is not relevant for the risk assessment of glyphosate because the biological monitoring data were only used to address pesticide exposure in general and not glyphosate in particular.
1426	Toxicology and metabolism	Leveroni F. A. et al.	2017	Genotoxic response of blood, gill and liver cells of <i>Piaractus mesopotamicus</i> after an acute exposure to a glyphosate-based herbicide	Caryologia (2017), Vol. 70, No. 1, pp. 21-28	Formulation tested in aquatic species (Roundup Full II; 66.2% glyphosate potassium salt; CAS no. 70901-12-1). As this is not the representative formulation, the article is not relevant to the renewal.
1427	Toxicology and metabolism	Lewis M. M. et al.	2017	Laterallized basal ganglia vulnerability to pesticide exposure in asymptomatic agricultural workers	Toxicological Sciences (2017), Vol. 159, No. 1, pp. 170-178	The results presented are not correlated with exposure to glyphosate. Therefore this article is not relevant to the renewal of glyphosate.

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1428	Toxicology and metabolism	Leyva-Soto L. A. et al.	2018	GLYPHOSATE AND AMINOMETHYLPHOSPHONIC ACID IN POPULATION OF AGRICULTURAL FIELDS: HEALTH RISK ASSESSMENT OVERVIEW.	Applied Ecology and Environmental Research (2018), Vol. 16, No. 4, pp. 5127-5140	This paper is misrepresented as an epidemiologic cohort study. It is an informal community health risk survey with uncertain exposure assessment and uncertain health outcomes. The study population is poorly characterized. Uncertain temporal relationship between purported glyphosate drinking water exposure and disease outcome. The analysis was not appropriate for a cohort (or case control) study and is not relevant for glyphosate renewal.
1429	Toxicology and metabolism	Li M-H. et al.	2016	Multi-tissue metabolic responses of goldfish (<i>Carassius auratus</i>) exposed to glyphosate-based herbicide.	Toxicology Research (2016), Vol. 5, No. 4, pp. 1039-1052	This paper presents results of a glyphosate based herbicide tested on goldfish. The end-points defined are not relevant to the human health risk assessment for glyphosate renewal.
1430	Toxicology and metabolism	Li Q. et al.	2013	Glyphosate and AMPA inhibit cancer cell growth through inhibiting intracellular glycine synthesis.	Drug design, development and therapy (2013), Vol. 7, pp. 635-43	This paper described the therapeutic applications of glyphosate and AMPA at very high in vitro doses to cancer cells. This is deemed not relevant to the glyphosate renewal.
1431	Toxicology and metabolism	Li Z.	2018	The use of a disability-adjusted life-year (DALY) metric to measure human health damage resulting from pesticide maximum legal exposures.	Science of the Total Environment (2018), Vol. 639, pp. 438-456	This publication is considered not relevant because it concerns the development of a uniform metric (the disability-adjusted life-year; DALY) in risk characterisation to express the human health impact of pesticide exposure and not experimental data that can be used for the risk assessment of glyphosate.
1432	Toxicology and metabolism	Litvinko N. M. et al.	2015	The effect of N-(phosphonomethyl)-glycine on phospholytic reaction catalyzed by phospholipase A2	Vestsi Natsyyanal'nai Akademii Navuk Belarusi. Seryya Khimichnykh Navuk (2015), Vol. 3, pp. 91-100	Unrealistic in vitro concentrations of ≥ 100 mg/mL were tested in the study. Therefore not relevant to the renewal of glyphosate.
1433	Toxicology and metabolism	Loomba R. S.	2016	Prevalence of isomerism from a European registry: Live births, fetal deaths, and terminations of pregnancy.	Congenital Anomalies (2016), Vol. 56, No. 6, pp. 256-257	This paper does not mention glyphosate or AMPA and is not relevant.
1434	Toxicology and metabolism	Lopez Gonzalez E. C. et al.	2013	Induction of micronuclei in broad snouted caiman (<i>Caiman latirostris</i>) hatchlings exposed in vivo to Roundup® (glyphosate) concentrations used in agriculture	Pesticide biochemistry and physiology (2013), Vol. 105, No. 2, pp. 131-134	The formulation tested in reptiles (Roundup, undefined, uncharacterized) is not the representative formulation, and therefore the article is not relevant to the renewal.
1435	Toxicology and metabolism	Lorenz V. et al.	2019	Epigenetic disruption of estrogen receptor alpha is induced by a glyphosate-based herbicide in the preimplantation uterus of rats.	Molecular and cellular endocrinology (2019), Vol. 480, pp. 133-141	Formulation tested (MAGNUM SUPER II) marketed in Argentina by Grupo Agros S.R.L. and comprises 66.2% potassium salt and 54% w/v a.e. As this is not the representative formulation, the article is not relevant to the renewal.
1436	Toxicology and metabolism	Loro V. L. et al.	2015	Glyphosate-based herbicide affects biochemical parameters in <i>Rhamdia quelen</i> (Quoy & Gaimard, 1824 and) <i>Leporinus obtusidens</i> (Valenciennes, 1837).	Neotropical Ichthyology (2015), Vol. 13, No. 1, pp. 229-235	This study describes the application of high aquatic doses of glyphosate based herbicide with observed effects attributable to the surfactant present in the formulation. As this is not the representative formulation, the article is not relevant to the renewal.
1437	Toxicology and metabolism	Luaces J. P. et al.	2017	Genotoxic effects of Roundup Full II® on lymphocytes of <i>Chaetophraetus villosus</i> (Xenarthra, Mammalia): In vitro studies.	PloS one (2017), Vol. 12, No. 8, pp. e0182911	Formulation tested in vivo (Roundup Full II, containing 66.2% glyphosate, Argentina). As this is not the representative formulation, the article is not relevant to the renewal.

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1438	Toxicology and metabolism	Luo L. et al.	2017	In vitro cytotoxicity assessment of roundup (glyphosate) in L-02 hepatocytes.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes (2017), Vol. 52, No. 6, pp. 410-417	Formulation tested in vitro (Roundup, containing 41% isopropylamine salt; Belgium). The effects observed are due to high dosing of the surfactant in vitro, and as this is not the representative formulation, the article is not relevant to the renewal.
1439	Toxicology and metabolism	Mahakhode R. H. et al.	2013	Mitotic abnormalities induced by glyphosate in <i>Psoralea corylifolia</i> L..	International Journal of Current Pharmaceutical Research (2013), Vol. 5, No. 1, pp. 46-48	Tested a plant species with a herbicide for adverse end-points; the identified end-points are not relevant to human health and the renewal.
1440	Toxicology and metabolism	Malagoli C. et al.	2016	Passive exposure to agricultural pesticides and risk of childhood leukemia in an Italian community.	International journal of hygiene and environmental health (2016), Vol. 219, No. 8, pp. 742-748	This study did not perform any specific analyses for glyphosate. Furthermore, there was a very small case control study with a speculative exposure variable. This is not relevant for the renewal of glyphosate.
1441	Toxicology and metabolism	Mao Y. et al.	2015	Effect of glyphosate on serum biochemical indices of exposed workers	Zhongguo Gongye Yixue Zazhi (2015), Vol. 28, No. 5, pp. 362-364	The worker protections and manufacturing processes in China do not reflect Western occupational exposure scenarios. Therefore this is not relevant to glyphosate renewal.
1442	Toxicology and metabolism	Marcoccia D. et al.	2017	Food components and contaminants as (anti)androgenic molecules.	Genes and Nutrition (2017), Vol. 12, No. 1 pp. 6	This paper discusses some glyphosate literature, but does not provide new data. Therefore it cannot be used in the glyphosate risk assessments.
1443	Toxicology and metabolism	Marques A. et al.	2014	Progression of DNA damage induced by a glyphosate-based herbicide in fish (<i>Anguilla anguilla</i>) upon exposure and post-exposure periods--insights into the mechanisms of genotoxicity and DNA repair.	Comparative biochemistry and physiology. Toxicology & pharmacology (2014), Vol. 166, pp. 126-33	This study outlines the test of a glyphosate based herbicide to aquatic species. As this is not the representative formulation, the article is not relevant to the renewal.
1444	Toxicology and metabolism	Martinez M. et al.	2019	Use of human neuroblastoma SH-SY5Y cells to evaluate glyphosate-induced effects on oxidative stress, neuronal development and cell death signaling pathways.	Environment international (2019), Vol. 135, pp. 105414	This publication is considered not relevant for the risk assessment of glyphosate and AMPA as the concentrations used for the measurement of oxidative stress and apoptosis were beyond the physiologically acceptable range of 1 mM (5 and 10 mM).
1445	Toxicology and metabolism	Martini C. N. et al.	2012	A commercial formulation of glyphosate inhibits proliferation and differentiation to adipocytes and induces apoptosis in 3T3-L1 fibroblasts.	Toxicology in vitro (2012), Vol. 26, No. 6, pp. 1007-13	The formulation tested in vitro (commercial glyphosate formulation; 48% w/v, isopropylamine salt, from Atanor, Argentina) is not the representative formulation, and thus the article is not relevant to the renewal.
1446	Toxicology and metabolism	Martini C. N. et al.	2016	Glyphosate Inhibits PPAR Gamma Induction and Differentiation of Preadipocytes and is able to Induce Oxidative Stress.	Journal of biochemical and molecular toxicology (2016), Vol. 30, No. 8, pp. 404-13	Formulation tested in vitro at a single high dose in the mM range (Glifosato Atanor, containing 48% isopropylamine salt, 35.6% glyphosate, Argentina). As this is not the representative formulation, the article is not relevant to the renewal.
1447	Toxicology and metabolism	Martini C. N. et al.	2016	Glyphosate-based herbicides with different adjuvants are more potent inhibitors of 3T3-L1 fibroblast proliferation and differentiation to adipocytes than glyphosate alone.	Comparative Clinical Pathology (2016), Vol. 25, No. 3, pp. 607-613	In this paper, three glyphosate-based herbicides with different adjuvants were tested in vitro. Glyphosate only effects were noted only at excessively high doses > 20mM; this is physiologically not possible to attain in standard regulatory in vivo testing

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1448	Toxicology and metabolism	Marx-Stoelting P. et al.	2014	Assessment of three approaches for regulatory decision making on pesticides with endocrine disrupting properties	Regulatory Toxicology and Pharmacology (2014), Vol. 70, No. 3, pp. 590-604	No glyphosate specific information was presented in this paper and therefore this article is not relevant to the renewal.
1449	Toxicology and metabolism	Mesnage R. et al.	2013	Cytotoxicity on human cells of CryIAb and CryIAc Bt insecticidal toxins alone or with a glyphosate-based herbicide.	Journal of applied toxicology (2013), Vol. 33, No. 7, pp. 695-9	Not only was the glyphosate based herbicide formulation tested together with other substances (Roundup GT Plus containing 450 g/L glyphosate), this is not the representative formulation, the article is not relevant to the renewal.
1450	Toxicology and metabolism	Mesnage R. et al.	2015	Transcriptome profile analysis reflects rat liver and kidney damage following chronic ultra-low dose Roundup exposure.	Environmental health (2015), Vol. 14, article No. 70	Formulation tested (Grand Travaux Plus (450 g/L, Belgium) for non-validated endpoints therefore cannot be used in an EU Annex I renewal.
1451	Toxicology and metabolism	Mesnage R. et al.	2018	Multionics reveal non-alcoholic fatty liver disease in rats following chronic exposure to an ultra-low dose of Roundup herbicide (vol 7, 39328, 2017).	Scientific Reports (2018), Vol. 8, pp. Article No.: 12572	The Roundup formulation tested in rats is not the representative formulation, and the article is not relevant to the renewal.
1452	Toxicology and metabolism	Meyer-Monath M. et al.	2014	Development of a multi-residue method in a fetal matrix: analysis of meconium	Analytical and Bioanalytical Chemistry (2014), Vol. 406, No. 30, pp. 7785-7797	This is primarily an analytical method paper for determination of multiple analytes (including glyphosate) in meconium. Actual meconium samples were analyzed. Minimal details of results provided, and no detections of glyphosate reported, therefore the report is not relevant.
1453	Toxicology and metabolism	Moreno N. C. et al.	2014	Genotoxic effects of the herbicide Roundup Transorb and its active ingredient glyphosate on the fish <i>Prochilodus lineatus</i> .	Environmental toxicology and pharmacology (2014), Vol. 37, No. 1, pp. 448-54	Formulation tested (Roundup Transorb® containing 480 g glyphosate /L, Monsanto Brazil Ltd). As this is not the representative formulation, and the article is not relevant to the renewal.
1454	Toxicology and metabolism	Morley W. A. et al.	2014	Diminished brain resilience syndrome: A modern day neurological pathology of increased susceptibility to mild brain trauma, concussion, and downstream neurodegeneration.	Surgical neurology international (2014), Vol. 5, pp. 97	Many hypotheses are discussed in this study with no data presented that could be used in a renewal dossier.
1455	Toxicology and metabolism	Moshammer H. et al.	2019	Validity of reported indicators of pesticide exposure and relevance for cytotoxic and genotoxic effects on buccal cells.	Mutagenesis (2019), Vol. 34, No. 2, pp. 147-152	This publication is considered not relevant for the risk assessment of glyphosate as the association between pesticide use in general and genotoxicity and cytotoxicity markers in buccal cells was studied only, and not specifically glyphosate.
1456	Toxicology and metabolism	Murussi C. et al.	2014	Changes in oxidative markers, endogenous antioxidants and activity of the enzyme acetylcholinesterase in farmers exposed to agricultural pesticides - a pilot study	Ciencia Rural (2014), Vol. 44, No. 7, pp. 1186-1193	This pilot study evaluated the use of general pesticides only with a comparison between treated and non-treated. Glyphosate alone was not evaluated and as a result this study cannot be used in the renewal dossier.
1457	Toxicology and metabolism	Mwabulambo S. G. et al.	2018	Health symptoms associated with pesticides exposure among flower and onion pesticide applicators in Arusha region.	Annals of Global Health (2018), Vol. 84, No. 3, pp. 369-379	This document describes the use of PPE during general occupational pesticide use and is not relevant to the glyphosate renewal dossier.

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1458	Toxicology and metabolism	Nagy K. et al.	2020	Systematic review of comparative studies assessing the toxicity of pesticide active ingredients and their product formulations.	Environmental research (2020), Vol. 181, pp. 108926	This is a review paper with no new data presented. Therefore is not relevant to the glyphosate risk assessments.
1459	Toxicology and metabolism	Nardi J. et al.	2017	Prepubertal subchronic exposure to soy milk and glyphosate leads to endocrine disruption.	Food and chemical toxicology (2017), Vol. 100, pp. 247-252	A paper describing a glyphosate formulation co-dosed with phytoestrogen. As this is a mixture the effects cannot be determined for glyphosate alone and thus the paper is not relevant for the renewal dossier.
1460	Toxicology and metabolism	Naz S. et al.	2019	Effect of glyphosate on hematological and biochemical parameters of Rabbit (Oryctolagus cuniculus)	Pure and Applied Biology (2019), Vol. 8, No. 1, pp. 78-92	Rabbits gavaged with a glyphosate based herbicide (Glyphosate comprised 48% of the formulation with another 48% glyphosate IPA (isopropylammonium salt) sourced in Pakistan. As this is not the representative formulation, and the article is not relevant to the renewal.
1461	Toxicology and metabolism	Negga R. et al.	2012	Exposure to glyphosate- and/or Mn/Zn-ethylene-bis-dithiocarbamate-containing pesticides leads to degeneration of γ -aminobutyric acid and dopamine neurons in <i>Caenorhabditis elegans</i> .	Neurotoxicity research (2012), Vol. 21, No. 3, pp. 281-90	This study describes invertebrate tests performed using a glyphosate based herbicide. As this is not the representative formulation, and the article is not relevant to the renewal.
1462	Toxicology and metabolism	Nippanon P. et al.	2019	Chemical pesticide use and quality of life of rubber farmers in the Northeast of Thailand.	Kathmandu University Medical Journal (2019), Vol. 17, No. 65	A paper evaluating the handling of agrochemicals as a risk factor, rather than individual pesticides. Similarly, only the percentage of farmers using glyphosate was reported.
1463	Toxicology and metabolism	Nishiyori Y. et al.	2014	Unilateral hippocampal infarction associated with an attempted suicide: a case report.	Journal of medical case reports (2014), Vol. 8, pp. 219	Glyphosate does not cross the blood brain barrier and does not cause neurotoxicity. Nor would it be expected that glyphosate ingestion unilaterally targets the dorsal part of the left hippocampus. This presentation is much more consistent with a small vessel embolic event and the patient should have been evaluated for risk factors for stroke such as atrial fibrillation or carotid atherosclerosis. Not relevant for the risk assessment.
1464	Toxicology and metabolism	Nobels I. et al.	2011	Toxicity Ranking and Toxic Mode of Action Evaluation of Commonly Used Agricultural Adjuvants on the Basis of Bacterial Gene Expression Profiles	PLOS ONE (2011), Vol. 6, No. 11, pp. E24139	A study on commonly used adjuvants and solvents in pesticide formulations, however no glyphosate or Roundup specific data is mentioned therefore the study is not relevant for the renewal dossier.
1465	Toxicology and metabolism	Norskov N. P. et al.	2019	Robust and highly sensitive micro liquid chromatography-tandem mass spectrometry method for analyses of polar pesticides (glyphosate, aminomethylphosphonic acid, N-acetyl glyphosate and N-acetyl aminomethylphosphonic acid) in multiple biological matrices.	Journal of chromatography. A (2019), Vol. 1605, pp. 360343	This paper concerns development of a glyphosate assay and is likely a precursor to a gut microbe study. No animal data and no information relevant for the risk assessment were presented.
1466	Toxicology and metabolism	Nur G. et al.	2018	Histopathological and biochemical responses to the oxidative stress induced by glyphosate-based herbicides in the rainbow trout (<i>Oncorhynchus mykiss</i>)	Journal of Cellular Neuroscience and Oxidative Stress (2018), Vol. 10, No. 1, pp. 656-665	A glyphosate based herbicide was tested in aquatic species, without positive control to verify validity of the assay. Gill damage is directly attributable to the surfactant present in the formulation, with oxidative stress a consequence of cell damage.

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1467	Toxicology and metabolism	Nwani C. D. et al.	2014	Induction of micronuclei and nuclear lesions in Channa punctatus following exposure to carbosulfan, glyphosate and atrazine.	Drug and chemical toxicology (2014), Vol. 37, No. 4, pp. 370-7	A glyphosate based herbicide (Roundup SL; India; 41% soluble liquid) was tested in aquatic species. This study discusses cellular and molecular level end-points that are not relevant to an EU level ecotoxicology risk assessment.
1468	Toxicology and metabolism	Owring I. et al.	2013	Antioxidant effect of ginger on the pituitary-gonadal axis hormones recovered from the devastating effects of the herbicide Glyphosate in female rats	International Journal of Biology, Pharmacy and Allied Sciences (2013), Vol. 2, No. 8, pp. 1606-1616	Dosing via i.p. injection daily for three weeks is not relevant. The glyphosate source is not described at all. It is not clear whether this study dosed a glyphosate based herbicide, a technical acid or salt.
1469	Toxicology and metabolism	Pandey A. et al.	2019	Inflammatory Effects of Subacute Exposure of Roundup in Rat Liver and Adipose Tissue.	Dose-response (2019), Vol. 17, No. 2, pp. 1	The formulation tested in this study (Herbicide Roundup, 41% w/w glyphosate, Monsanto India Ltd, Mumbai, India) is not the representative formulation and is not relevant to the renewal.
1470	Toxicology and metabolism	Parajuli K. R. et al.	2015	Aminomethylphosphonic acid and methoxyacetic acid induce apoptosis in prostate cancer cells.	International journal of molecular sciences (2015), Vol. 16, No. 5, pp. 11750-65	In this study the therapeutic use of AMPA was evaluated rather than glyphosate. Therefore it is not relevant to the renewal.
1471	Toxicology and metabolism	Parajuli K. R. et al.	2016	Aminomethylphosphonic acid inhibits growth and metastasis of human prostate cancer in an orthotopic xenograft mouse model.	Oncotarget (2016), Vol. 7, No. 9, pp. 10616-26	In this study the therapeutic use of AMPA was evaluated rather than glyphosate. Therefore it is not relevant to the renewal.
1472	Toxicology and metabolism	Paumgarten F. J. R.	2019	Comment on 'Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats', Arch Toxicol 92:2629-2643 : On the impairment of female reproductive performance by developm	Archives of toxicology (2019), Vol. 93, No. 3, pp. 831-832	Letter refers to a previous paper published by Milesi et al (Perinatal exposure to a glyphosate-based herbicide impairs.; Arch Toxicol 2018, 92(8):2629–2643.); Milesi et al is not in Marian's LRR2 list.
1473	Toxicology and metabolism	Perego M. C. et al.	2017	Influence of a Roundup formulation on glyphosate effects on steroidogenesis and proliferation of bovine granulosa cells in vitro.	Chemosphere (2017), Vol. 188, pp. 274-279	This study examines the in vitro formulation effects only, rather than glyphosate alone.
1474	Toxicology and metabolism	Perez-Torres I. et al.	2017	Beneficial Effects of the Amino Acid Glycine.	Mini reviews in medicinal chemistry (2017), Vol. 17, No. 1, pp. 15-32	This paper does not contain any data pertaining to glyphosate and is therefore not relevant.
1475	Toxicology and metabolism	Peters C. E. et al.	2018	Priority Setting for Occupational Cancer Prevention.	Safety and Health at Work (2018), Vol. 9, No. 2, pp. 133-139	This paper does not contain any data pertaining to glyphosate and is therefore not relevant
1476	Toxicology and metabolism	Portier C. J. et al.	2016	Differences in the carcinogenic evaluation of glyphosate between the International Agency for Research on Cancer (IARC) and the European Food Safety Authority (EFSA).	Journal of epidemiology and community health (2016), Vol. 70, No. 8, pp. 741-5	This publication is considered not relevant because it is not based on experimental data.
1477	Toxicology and metabolism	Pouokam G. B. et al.	2017	A Pilot Study in Cameroon to Understand Safe Uses of Pesticides in Agriculture, Risk Factors for Farmers' Exposure and Management of Accidental Cases.	Toxics (2017), Vol. 5, No. 4	This paper does not contain any data pertaining to glyphosate and is therefore not relevant.

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1478	Toxicology and metabolism	Qiu S. et al.	2020	Toxic effects of glyphosate on intestinal morphology, antioxidant capacity and barrier function in weaned piglets.	Ecotoxicology and environmental safety (2020), Vol. 187, pp. 109846	This study investigates glyphosate based herbicides dosed to piglets. As this is not the representative formulation, and the article is not relevant to the renewal.
1479	Toxicology and metabolism	Ramsden J. J.	2017	Assaults on health.	Journal of Biological Physics and Chemistry (2017), Vol. 17, No. 1, pp. 3-7	Commentary on various threats to human health and not directly relevant to the renewal.
1480	Toxicology and metabolism	Rappazzo K. M. et al.	2019	Maternal residential exposure to specific agricultural pesticide active ingredients and birth defects in a 2003-2005 North Carolina birth cohort.	Birth defects research (2019), Vol. 111, No. 6, pp. 312-323	Highly speculative exposure assessment limited to pesticides makes it impossible to adequately assess results. Therefore this study is not relevant.
1481	Toxicology and metabolism	Robert J. R. et al.	2013	Council on Environmental Health. Technical Report: Pesticide Exposure in Children (vol 130, pg e1765, 2012).	Pediatrics (2013), Vol. 131, No. 5, pp. 1013-1014	This paper does not contain any data pertaining to glyphosate and is therefore not relevant.
1482	Toxicology and metabolism	Rojas Garcia A. E. et al.	2018	Special issue on pesticide contamination and toxicology. Numero especial: Contaminacion y toxicologia por plaguicidas	Revista Internacional de Contaminacion Ambiental (2018), Vol. 34, pp. 7-105	A special issue with seven articles that were either reviews discussing glyphosate, or not relevant to glyphosate.
1483	Toxicology and metabolism	Romano M. A. et al.	2012	Glyphosate impairs male offspring reproductive development by disrupting gonadotropin expression.	Archives of toxicology (2012), Vol. 86, No. 4, pp. 663-73	This publication is considered not relevant for the risk assessment of glyphosate as a glyphosate based herbicide (Roundup Transorb) has been tested instead of glyphosate.
1484	Toxicology and metabolism	Romano M. A. et al.	2012	Reply to comment of John M. DeSesso and Amy L. Williams regarding "Glyphosate impairs male offspring reproductive development by disrupting gonadotropin expression" by Romano et al. 2012	Archives of Toxicology (2012), Vol. 86, No. 11, pp. 1795-1797	This article reflects the categorization of the original article which was classified as not relevant.
1485	Toxicology and metabolism	Romano R. M. et al.	2010	Prepubertal exposure to commercial formulation of the herbicide glyphosate alters testosterone levels and testicular morphology.	Archives of toxicology (2010), Vol. 84, No. 4, pp. 309-17	The test material was a glyphosate-based formulation and not the reference formulation MON 52276 and is therefore not relevant
1486	Toxicology and metabolism	Roongruangchai J. et al.	2018	The teratogenic effects of glyphosate based herbicide (GBH) on the development of chick embryos.	Siriraj Medical Journal (2018), Vol. 70, No. 5, pp. 419-428	This report studies the injection of glyphosate based fertilisers into fertilized chicken eggs. As this is not the representative formulation, the article is not relevant to the renewal.
1487	Toxicology and metabolism	Salaroli L. et al.	2019	Occupational Exposure to Agrochemicals, Risks and Safety Practices in Family Agriculture in a Municipality of the State of Espírito Santo, Brazil (P04-077-19).	Current developments in nutrition (2019), Vol. 3, No. Suppl 1, pp. 259	General pesticide review of occupational exposures and safety practices and not relevant for the renewal.
1488	Toxicology and metabolism	Samsel A. et al.	2013	Glyphosate, pathways to modern diseases II: Celiac sprue and gluten intolerance.	Interdisciplinary toxicology (2013), Vol. 6, No. 4, pp. 159-84	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.
1489	Toxicology and metabolism	Samsel A. et al.	2015	Glyphosate, pathways to modern diseases III: Manganese, neurological diseases, and associated pathologies.	Surgical neurology international (2015), Vol. 6, pp. 45	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.

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1490	Toxicology and metabolism	Samsel A. et al.	2013	Glyphosate's suppression of cytochrome P450 enzymes and amino acid biosynthesis by the gut microbiome: pathways to modern diseases	Entropy (2013), Vol. 15, pp. 1416-1463	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.
1491	Toxicology and metabolism	Samsel A. et al.	2015	Glyphosate, pathways to modern diseases IV: cancer and related pathologies.	Journal of Biological Physics and Chemistry (2015), Vol. 15, No. 3, pp. 121-159	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.
1492	Toxicology and metabolism	Samsel A. et al.	2016	Glyphosate pathways to modern diseases V: Amino acid analogue of glycine in diverse proteins.	Journal of Biological Physics and Chemistry (2016), Vol. 16, No. 1, pp. 9-46	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.
1493	Toxicology and metabolism	Samsel A. et al.	2017	Glyphosate pathways to modern diseases VI: Prions, amyloidosis and autoimmune neurological diseases.	Journal of Biological Physics and Chemistry (2017), Vol. 17, No. 1, pp. 8-32	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.
1494	Toxicology and metabolism	Scammell M. K. et al.	2019	Environmental and Occupational Exposures in Kidney Disease.	Seminars in Nephrology (2019), Vol. 39, No. 3, pp. 230-243	This paper does not contain any new data pertaining to glyphosate and is therefore not relevant.
1495	Toxicology and metabolism	Schaumburg L. G. et al.	2016	Genotoxicity induced by Roundup® (Glyphosate) in tegu lizard (Salvator merianae) embryos.	Pesticide biochemistry and physiology (2016), Vol. 130, pp. 71-78	A glyphosate based herbicide was tested in lizard eggs. As this was not the representative formulation the article is not relevant to the renewal.
1496	Toxicology and metabolism	Seneff S. et al.	2015	Death as a drug side effect in FAERS: is glyphosate contamination a factor?	Agricultural Sciences (2015), Vol. 6, No. 12, pp. 1472-1501	Within this report, hypotheses are discussed without any empirical data. Therefore it is not relevant to the renewal.
1497	Toxicology and metabolism	Seneff S. et al.	2015	Aluminum and glyphosate can synergistically induce pineal gland pathology: connection to gut dysbiosis and neurological disease.	Agricultural Sciences (2015), Vol. 6, No. 1, pp. 42-70	This paper is not relevant as it is not based on experimental work and no epidemiologic methodology was followed. Conclusion (glyphosate and aluminum, operate synergistically to induce dysfunction in the pineal gland leading to the sleep disorder that is characteristic of multiple neurological diseases, including autism, ADHD, depression, Alzheimer's disease, ALS, anxiety disorder and Parkinson's disease) is pure speculation and is not corroborated by current experimental data.
1498	Toxicology and metabolism	Seneff S. et al.	2017	Can glyphosate's disruption of the gut microbiome and induction of sulfate deficiency explain the epidemic in gout and associated diseases in the industrialized world?	Journal of Biological Physics and Chemistry (2017), Vol. 17, No. 2, pp. 53-76	Study is not relevant as it is not based on experimental work and no epidemiologic methodology was followed. Results and proposed mode of actions are speculation without any experimental proof.
1499	Toxicology and metabolism	Seneff S. et al.	2013	Is encephalopathy a mechanism to renew sulfate in autism?	Entropy (2013), Vol. 15, pp. 372-406	This paper presents hypotheses without data and is not relevant.
1500	Toxicology and metabolism	Seralini G. E.	2015	Why glyphosate is not the issue with Roundup A short overview of 30 years of our research.	Journal of Biological Physics and Chemistry (2015), Vol. 15, No. 3, pp. 111-119	A review of glyphosate vs formulations. Secondary source of information, not experimental data presented.
1501	Toxicology and metabolism	Seralini G. E. et al.	2014	Conclusiveness of toxicity data and double standards	FOOD AND CHEMICAL TOXICOLOGY (2014), Vol. 69, pp. 357-359	This is a commentary of a Seralini paper retraction and not relevant.
1502	Toxicology and metabolism	Seralini G. E. et al.	2014	Conflicts of interests, confidentiality and censorship in health risk assessment: the example of an herbicide and a GMO.	Environmental Sciences Europe (2014), Vol. 26, No. 13, pp. 1	This is a commentary article and not relevant.

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1503	Toxicology and metabolism	Seralini G. et al.	2012	Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize.	Food and chemical toxicology (2012), Vol. 50, No. 11, pp. 4221-31	This paper is a retraction announcement from the journal publishers and not relevant.
1504	Toxicology and metabolism	Seralini G. et al.	2014	Republished study: long-term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize.	Environmental sciences Europe (2014), Vol. 26, No. 1, pp. 14	This publication is considered not relevant for risk assessment of glyphosate because a glyphosate formulation was used instead of glyphosate.
1505	Toxicology and metabolism	Siddiqui S. et al.	2012	Glyphosate, alachlor and maleic hydrazide have genotoxic effect on <i>Trigonella foenum-graecum</i> L.	Bulletin of environmental contamination and toxicology (2012), Vol. 88, No. 5, pp. 659-65	Not valid to evaluate genotoxicity of herbicides on the plant species tested.
1506	Toxicology and metabolism	Soudani N. et al.	2019	Glyphosate disrupts redox status and up-regulates metallothionein I and II genes expression in the liver of adult rats. Alleviation by quercetin.	General physiology and biophysics (2019), Vol. 38, No. 2, pp. 123-134	This publication is considered not relevant for the risk assessment of glyphosate because the route of administration used was not appropriate (intraperitoneal injection).
1507	Toxicology and metabolism	Stur E. et al.	2019	Glyphosate-based herbicides at low doses affect canonical pathways in estrogen positive and negative breast cancer cell lines.	PloS one (2019), Vol. 14, No. 7, pp. e0219610	This publication is considered not relevant for the risk assessment of glyphosate as the concentration of AMPA used (10 mM) is beyond the physiologically acceptable range (> 1 mM). Evaluation of a glyphosate-based herbicide in vitro systems is not relevant to the risk assessment of glyphosate due to the effects of surfactants on cells.
1508	Toxicology and metabolism	Swanson N. L. et al.	2014	Genetically engineered crops, glyphosate and the deterioration of health in the United States of America.	Journal of Organic Systems (2014), Vol. 9, No. 2, pp. 6-37	This publication is considered not relevant for the risk assessment of glyphosate as no epidemiological approach was followed to establish an association between exposure to glyphosate and disease outcome.
1509	Toxicology and metabolism	Szabo R. et al.	2017	Studies on joint toxic effects of a glyphosate herbicide (Fozat 480) and a heavy metal (cadmium) on chicken embryos.	AGROFOR International Journal (2017), Vol. 2, No. 3, pp. 37-43	Glyphosate based herbicide applied to fertilized chicken eggs, is not the representative formulation and not relevant to human health risk assessment.
1510	Toxicology and metabolism	Szemeredy G. et al.	2016	TOXICITY TEST OF INDIVIDUAL AND COMBINED TOXIC EFFECTS OF HERBICIDE GLIALKA STAR AND LEAD-ACETATE ON CHICKEN EMBRYOS. Original Title: GLIALKA STAR GYOMIRTO SZER ES AZ OLOM-ACETAT EGYEDI ES INTERAKCIOS TOXICITASNAK VIZSGALATA MADAREMBRIOKBAN.	Novenydelem (2016), Vol. 52, No. 10, pp. 483-487	Formulation tested via injection to chicken embryos. This is not a typical route of exposure. Tested formulation was not the representative formulation for the renewal.
1511	Toxicology and metabolism	Szezanowski F. et al.	2018	Glyphosate-based herbicide, but not pure glyphosate, affects peripheral nervous system myelination.	European Journal of Neurology (2018), Vol. 25, Supp. 2, pp. 567.	Effects observed in this study were noted with a glyphosate based herbicide only in vitro. In addition, as this was not the representative formulation the article is not relevant to the renewal.
1512	Toxicology and metabolism	Teleken J. L. et al.	2019	Glyphosate-based herbicide exposure during pregnancy and lactation malprograms the male reproductive morphofunction in F1 offspring.	Journal of developmental origins of health and disease (2019), Vol. 11, No. 2, pp 146-153	This study described a glyphosate based herbicide dosed to mice. As this was not the representative formulation the article is not relevant to the renewal.

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1513	Toxicology and metabolism	Tineher C. et al.	2017	The Glyphosate-Based Herbicide Roundup Does not Elevate Genome-Wide Mutagenesis of <i>Escherichia coli</i> .	G3 (Bethesda, Md.) (2017), Vol. 7, No. 10, pp. 3331-3335	This publication is considered not relevant for the risk assessment of glyphosate as a glyphosate based formulation was used instead of glyphosate for in vitro testing.
1514	Toxicology and metabolism	Tizhe E. et al.	2018	Pancreatic function and histoarchitecture in Wistar rats following chronic exposure to Bushfire®: the mitigating role of zinc.	The Journal of international medical research (2018), Vol. 46, No. 8, pp. 3296-3305	The formulation tested (BushfireVR, containing 441 g/L potassium salt; 360 g a.e./L) is not the representative formulation the article is not relevant to the renewal.
1515	Toxicology and metabolism	Tizhe E. V. et al.	2014	Serum biochemical assessment of hepatic and renal functions of rats during oral exposure to glyphosate with zinc.	Comparative clinical pathology (2014), Vol. 23, pp. 1043-1050	This publication is considered not relevant for the risk assessment of glyphosate as a combination of zinc chloride and a glyphosate formulation (Bushfire) has been used instead of glyphosate.
1516	Toxicology and metabolism	Tizhe E. V. et al.	2019	Effect of zinc on erythrocyte osmotic fragility and hemogram following chronic exposure to glyphosate-based herbicide in Wistar rats	Comparative Clinical Pathology (2019), Vol. 28, pp. 1275-1279	Formulation tested (BUSHFIRE, Ningbo Agro-star Industrial Co., Ltd., Zhejiang, China: 441 g/L potassium salt, 360 g/L a.e.). As this was not the representative formulation the article is not relevant to the renewal.
1517	Toxicology and metabolism	Tsatsakis A. M. et al.	2019	Homeotic Neurobehavioral effects of low dose toxic chemical mixtures in real-life risk simulation (RLRS) in rats	Food and Chemical Toxicology (2019), 125, 141-149	The test material was a mixture of thirteen different chemicals and cannot be interpreted for glyphosate alone.
1518	Toxicology and metabolism	Turkmen R. et al.	2019	Prenatal and neonatal exposure to glyphosate-based herbicide reduces the primordial to primary follicle transition in the newborn rat ovary: a preliminary study	Kocatepe Veterinary Journal (2019), Vol. 12, No. 2, pp. 168-177	Rats gavaged with a glyphosate based herbicide [Knockdown 48 SL; Safa Agriculture Inc., Turkey] As this was not the representative formulation the article is not relevant to the renewal.
1519	Toxicology and metabolism	Turkmen R. et al.	2019	Protective effects of resveratrol on biomarkers of oxidative stress, biochemical and histopathological changes induced by sub-chronic oral glyphosate-based herbicide in rats.	Toxicology research (2019), Vol. 8, No. 2, pp. 238-245	This paper describes high oral gavage dosing of a glyphosate based herbicide. As this is not the representative formulation the article is not relevant to the renewal.
1520	Toxicology and metabolism	Turkmen R. et al.	2019	Antioxidant and cytoprotective effects of N-acetylcysteine against subchronic oral glyphosate-based herbicide-induced oxidative stress in rats.	Environmental science and pollution research international (2019), Vol. 26, No. 11, pp. 11427-11437	The formulation tested in this article (Knockdown 48SL, Safa Agriculture Corp., Turkey; containing 480 g/L isopropylamine salt) is not the representative formulation and is not relevant to the renewal.
1521	Toxicology and metabolism	Upadhyay J. et al.	2019	Biomarker responses (serum biochemistry) in pregnant female wistar rats and histopathology of their neonates exposed prenatally to pesticides	Brazilian Journal of Pharmaceutical Sciences (2019), Vol. 55, pp. e18194	In this report a glyphosate based herbicide was tested (Topper 77; Crystal Crop Protection Pvt. Ltd. India) at one dose to six rats and compared with controls. As this was not the representative formulation the article is not relevant to the renewal.
1522	Toxicology and metabolism	Vandenberg L. N. et al.	2017	Is it time to reassess current safety standards for glyphosate-based herbicides?.	Journal of epidemiology and community health (2017), Vol. 71, No. 6, pp. 613-618	This publication is considered not relevant because it is not based on experimental work.
1523	Toxicology and metabolism	Varayoud J. et al.	2017	Effects of a glyphosate-based herbicide on the uterus of adult ovariectomized rats.	Environmental toxicology (2017), Vol. 32, No. 4, pp. 1191-1201	This publication is considered not relevant for the risk assessment of glyphosate as a non-representative glyphosate formulation was tested instead of glyphosate.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1524	Toxicology and metabolism	Vinceti M. et al.	2017	Pesticide exposure assessed through agricultural crop proximity and risk of amyotrophic lateral sclerosis.	Environmental Health (2017), Vol. 16, No. 1. pp. 91	This article does not demonstrate correlations with glyphosate use and effect and is therefore not relevant.
1525	Toxicology and metabolism	Von Ehrenstein O. S. et al.	2019	Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: Population based case-control study	BMJ (Online) (2019), Vol. 364, pp. 1962	This publication is not relevant for the risk assessment of glyphosate with relation to ED because the pathology investigated is not ED related (autism spectrum disorder in children).
1526	Toxicology and metabolism	Wallace Hayes A.	2014	Editor in Chief of Food and Chemical Toxicology answers questions on retraction	Food and chemical toxicology (2014), Vol. 65, pp. 394-5	Letter from editor on Seralini retraction (2012) -> #2472, 3617, 5654 (all not relevant)
1527	Toxicology and metabolism	Wang F. et al.	2018	Advance on clinical study of glyphosate toxicity.	Journal of Environmental & Occupational Medicine (2018), Vol. 35, No. 2, pp. 175-179	A review and summary of selected literature.
1528	Toxicology and metabolism	Wilhelm C. M. et al.	2015	Assessment of DNA damage in floriculturists in southern Brazil	Environmental Science and Pollution Research (2015), Vol. 22, No. 11, pp. 8182-8189	No glyphosate specific conclusions, confounded due to multiple pesticide uses.
1529	Toxicology and metabolism	Wilke R. A. et al.	2019	Chronic Kidney Disease in Agricultural Communities	AMERICAN JOURNAL OF MEDICINE (2019), Vol. 132, No. 10, pp. E727-E732	Discussion of different factors that could be used to predict prevalence of chronic kidney disease in the US.
1530	Toxicology and metabolism	Witherspoon N. O.	2019	Protecting children from known pesticides exposures: our collective duty to provide primary prevention.	Pediatric Research (2019), Vol. 85, No. 2, pp. 118-119	Study does not include data on glyphosate and is therefore not relevant.
1531	Toxicology and metabolism	Wongta A. et al.	2018	The Pesticide Exposure of People Living in Agricultural Community, Northern Thailand.	Journal of toxicology (2018), Vol. 2018, pp. 4168034	Farming practices in Thailand are not applicable to European farmer exposure scenarios.
1532	Toxicology and metabolism	Wozniak E. et al.	2018	The mechanism of DNA damage induced by Roundup 360 PLUS, glyphosate and AMPA in human peripheral blood mononuclear cells - genotoxic risk assessment.	Food and chemical toxicology (2018), Vol. 120, pp. 510-522	In vitro effects only noted at excessively high doses greater than 100-250 uM. Therefore this article is not relevant to the risk assessment.
1533	Toxicology and metabolism	Wumbei A. et al.	2019	Pesticides use and exposure among yam farmers in the Nanumba traditional area of Ghana.	Environmental monitoring and assessment (2019), Vol. 191, No. 5, pp. 307	Article is not relevant to agricultural practices and glyphosate uses in Europe.
1534	Toxicology and metabolism	Youness E. R. et al.	2016	The protective effect of orange juice on glyphosate toxicity in adult male mice.	Journal of Chemical and Pharmaceutical Research (2016), Vol. 8, No. 3, pp. 13-28	This study uses excessively high gavage doses to rats and is not relevant to renewal.
1535	Toxicology and metabolism	Yu H. et al.	2013	The antagonistic effects of tea polyphenols on damage of mouse Sertoli cells induced by glyphosate.	Acta Nutrimenta Sinica (2013), Vol. 35, No. 3, pp. 283-287	In vitro study testing of what appears to be a formulated product, described as, glyphosate (41% Isopropylamine Hydrochloride, Monsanto glyphosate (41% Isopropylamine Hydrochloride, Monsanto), dosed at 10-160 ug/mL (high glyphosate levels of 24-390 uM plus surfactant), well above any potential physiological concentrations in sertoli cells.
1536	Toxicology and metabolism	Yu N. et al.	2018	Circular RNA expression profiles in hippocampus from mice with perinatal glyphosate exposure.	Biochemical and biophysical research communications (2018), Vol. 501, No. 4, pp. 838-845	This publication is considered not relevant for risk assessment of glyphosate with relation to ED because a no ED related endpoint was investigated (circular RNA expression profiles in the hippocampus).
1537	Toxicology and metabolism	Zanardi M. V. et al.	2019	Glyphosate-based herbicide induces hyperplastic ducts in the mammary gland of aging Wistar rats.	Molecular and cellular endocrinology (2019), Vol. 501, pp. 110658	This study examines the effects of glyphosate based herbicide dosed to rats. As this is not the representative formulation the article is not relevant to the renewal.

No	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
1538	Toxicology and metabolism	Zhang H.-C. et al.	2018	Molecular cloning, characterization, expression and enzyme activity of catalase from planarian <i>Dugesia japonica</i> in response to environmental pollutants.	Ecotoxicology and environmental safety (2018), Vol. 165, pp. 88-95	Novel microbial test system of questionable relevance to human health risk assessment.
1539	Toxicology and metabolism	Zhao W. et al.	2013	Effects of glyphosate on apoptosis and expressions of androgen-binding protein and vimentin mRNA in mouse Sertoli cells	Journal of Southern Medical University (2013), Vol. 33, No. 11, pp. 1709-13	Not relevant. In vitro testing of a glyphosate based herbicide.
1540	Toxicology and metabolism	Zhao W.-H. et al.	2016	THE PROTECTIVE EFFECTS OF TEA POLYSACCHARIDES ON INJURY AND APOPTOSIS OF MOUSE SERTOLI CELLS INDUCED BY GLYPHOSATE.	Current Topics in Nutraceuical Research (2016), Vol. 14, No. 1, pp. 81-90	Not relevant. In vitro testing of a glyphosate based herbicide.
1541	Toxicology and metabolism	Zhu J. et al.	2018	An Effective Machine Learning Approach for Identifying the Glyphosate Poisoning Status in Rats Using Blood Routine Test	IEEE ACCESS (2018), Vol. 6, pp. 15653-15662	Test substance source not identified, not clear whether glyphosate or formulation administered to animals. Data used in development of machine learning.
1542	Toxicology and metabolism	Zoccali C.	2017	Causal mechanism and component causes in Mesoamerican-Sri Lankan nephropathy: the moderator's view	NEPHROLOGY DIALYSIS TRANSPLANTATION (2017), Vol. 32, No. 4, pp. 607-610	No glyphosate specific information provided.

Appendix 1: AGG ADVICE on how to present the literature search in the dossier**ASSESSMENT GROUP ON GLYPHOSATE (AGG)**

October 2019

**ADVICE TO GTF2:
HOW TO PRESENT THE LITERATURE SEARCH
IN THE DOSSIER TO BE SUBMITTED JUNE 2020**

The literature search should be carried out and presented as recommended in the EFSA Guidance EFSA Journal 2011;9(2):2092) including its recently published Appendix, available at the EFSA Journal.

**Rapid assessment of
titles/abstracts:**

Articles that are
considered as **not
relevant**:

Not necessary to submit
articles or study
summaries but
justification needed at a
general level, i.e. criteria
used to classify references
as being clearly non-
relevant.

**Detailed assessment of
full text of articles:**
Articles that are
considered as **not
relevant
or
considered not reliable**:

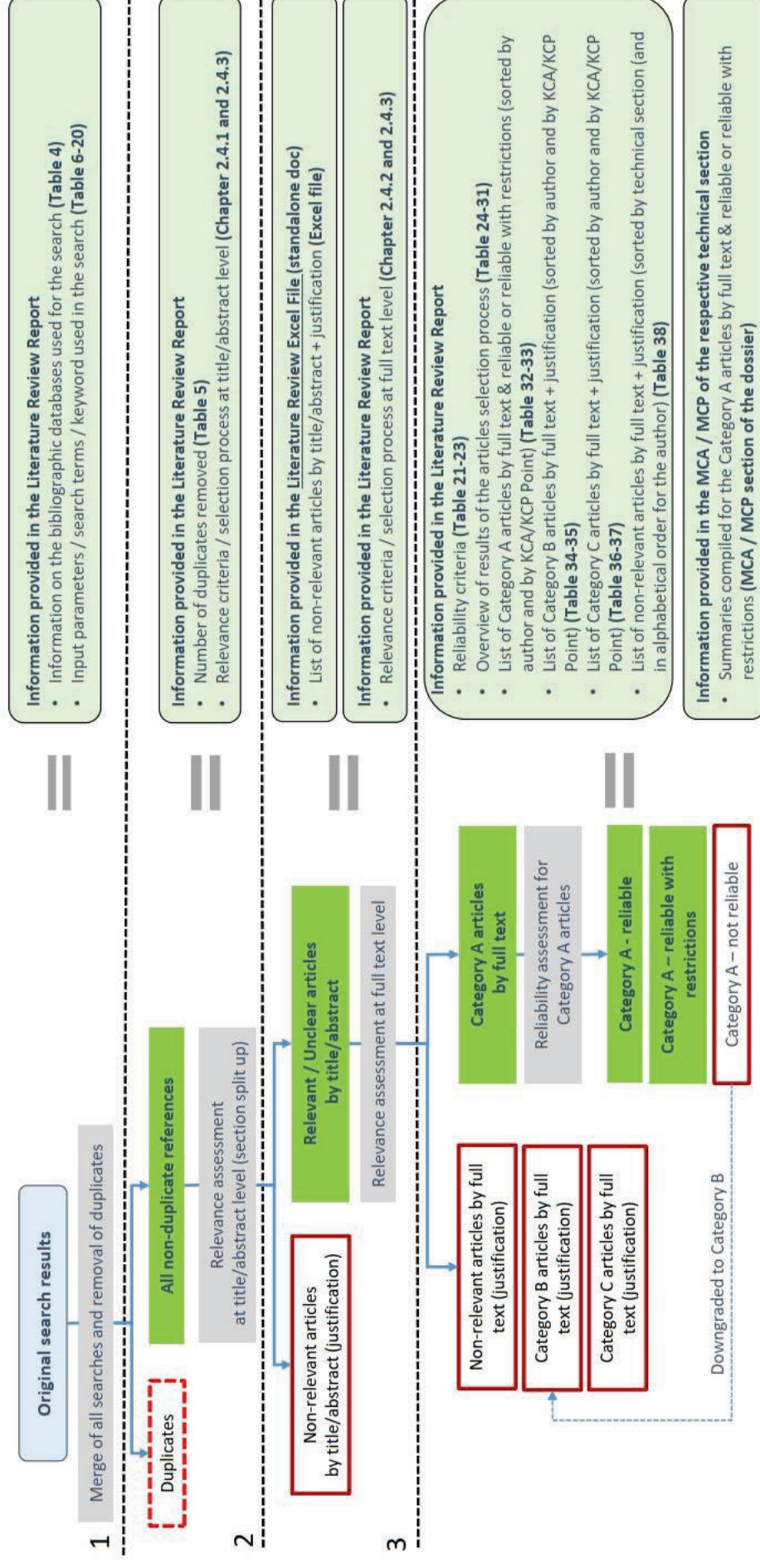
Necessary to submit
articles and statement
with the reason of
rejection (no study
summaries).

**Detailed assessment of
full text of articles:**
Articles considered as
relevant and reliable:

Necessary to submit
articles. A detailed study
summary should be
provided in the relevant
section of Doc
MCA/MCP.

For presentation of
detailed study summary,
reference is made to
EFSA Administrative
guidance on submission
of dossiers and
assessment reports for
the peer-review of
pesticide active
substances (27 March
2019, doi:
10.2903/sp.efsa.2016.EN
-1612).

Appendix 2: The process of articles selection



Appendix 3: ORIGINAL SEARCH QUERY - Part 0

FILE 'MEDLINE' ENTERED AT 12:20:57 ON 28 OCT 2019
CHARGED TO COST=108689

L1 QUE SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
 GLYPHOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
 5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
 69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
 OR 1066-51-9
 SAVE TEMP L1 GLY1/Q

L2 QUE SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
 ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
 ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
 AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
 PHOSPHONIC ACID OR 57637-97-5
 SAVE TEMP L2 GLY2/Q

L3 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
 HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
 IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
 EYE? OR IRRIT? OR SENS? OR ALLERG?

L4 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
 GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
 METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
 ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?

L5 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
 CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
 OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
 OR HORMON? OR GONAD? OR DISRUPT?

L6 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
 MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
 PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
 EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
 OCCUPAT?

L7 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
 MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
 CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
 RISK ASSESSMENT?

L8 QUE SPE=ON ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6 OR L7)
 SAVE TEMP L8 TOX/Q

L9 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
 OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
 METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
 MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING

L10 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
 PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
 HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
 OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?

L11 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
 OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE

L12 QUE SPE=ON ABB=ON PLU=ON (L9 OR L10 OR L11)
 SAVE TEMP L12 RES/Q

L13 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
 DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR
 SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
 AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER

L14 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
 OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
 OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
 ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT

L15 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR
 PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR
 HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE
 MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT
 PROCESSES

L16 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAI
 NS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR
 OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER
 OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR
 PERSISTENCE OR LIGAND

L17 QUE SPE=ON ABB=ON PLU=ON (L13 OR L14 OR L15 OR L16)
 SAVE TEMP L17 FATE/Q

L18 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR
 ?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR
 BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR
 EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR
 PROTECTION GOALS OR ECO?

L19 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY
 OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC
 OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS?
 OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI?
 OR ALG? OR CHIRON?

L20 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR
 LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR
 INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR
 APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR

L21 QUE SPE=ON ABB=ON PLU=ON PLANT AND (SUBMERGE? OR EMERGE?)

L22 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR
 FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR
 RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR
 ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR
 PARASITOID

L23 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIU
 S OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL?
 OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR
 MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR
 NITROGEN

L24 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR

SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR
ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB?
OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL
L25 QUE SPE=ON ABB=ON PLU=ON (L18 OR L19 OR L20 OR L21 OR L22
OR L23 OR L24)
SAVE TEMP L25 ECO/Q
D SAVE

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 12:33:22 ON 28 OCT 2019

Final search - publication year 2010-2011:

FILE 'MEDLINE' ENTERED AT 13:03:38 ON 28 OCT 2019
CHARGED TO COST=108689

L1 3311 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L2 257 SEA SPE=ON ABB=ON PLU=ON L1 AND 2010-2011/PY
L3 249 SEA SPE=ON ABB=ON PLU=ON L2 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L4 5 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L5 0 SEA SPE=ON ABB=ON PLU=ON L4 AND 2010-2011/PY

FILE 'AGRICOLA' ENTERED AT 13:07:29 ON 28 OCT 2019
CHARGED TO COST=108689

L6 6804 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L7 412 SEA SPE=ON ABB=ON PLU=ON L6 AND 2010-2011/PY
L8 412 SEA SPE=ON ABB=ON PLU=ON L7 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L9 3 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L10 0 SEA SPE=ON ABB=ON PLU=ON L9 AND 2010-2011/PY

FILE 'BIOSIS' ENTERED AT 13:09:54 ON 28 OCT 2019
CHARGED TO COST=108689

L11 10255 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L12 692 SEA SPE=ON ABB=ON PLU=ON L11 AND 2010-2011/PY
L13 583 SEA SPE=ON ABB=ON PLU=ON L12 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L14 7 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L15 1 SEA SPE=ON ABB=ON PLU=ON L14 AND 2010-2011/PY
L16 0 SEA SPE=ON ABB=ON PLU=ON L15 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'CABA' ENTERED AT 13:11:30 ON 28 OCT 2019
CHARGED TO COST=108689

L17 17998 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L18 1018 SEA SPE=ON ABB=ON PLU=ON L17 AND 2010-2011/PY
L19 1018 SEA SPE=ON ABB=ON PLU=ON L18 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L20 5 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L21 0 SEA SPE=ON ABB=ON PLU=ON L20 AND 2010-2011/PY

FILE 'FSTA' ENTERED AT 13:12:58 ON 28 OCT 2019
CHARGED TO COST=108689

L22 478 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L23 34 SEA SPE=ON ABB=ON PLU=ON L22 AND 2010-2011/PY
L24 33 SEA SPE=ON ABB=ON PLU=ON L23 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L25 4 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L26 0 SEA SPE=ON ABB=ON PLU=ON L25 AND 2010-2011/PY

FILE 'PQSCITECH' ENTERED AT 13:14:11 ON 28 OCT 2019
CHARGED TO COST=108689

L27 4932 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L28 505 SEA SPE=ON ABB=ON PLU=ON L27 AND 2010-2011/PY
L29 468 SEA SPE=ON ABB=ON PLU=ON L28 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L30 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L31 1 SEA SPE=ON ABB=ON PLU=ON L30 AND 2010-2011/PY
L32 0 SEA SPE=ON ABB=ON PLU=ON L31 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'TOXCENTER' ENTERED AT 13:15:40 ON 28 OCT 2019
CHARGED TO COST=108689

L33 14261 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L34 1677 SEA SPE=ON ABB=ON PLU=ON L33 AND 2010-2011/PY
L35 736 SEA SPE=ON ABB=ON PLU=ON L34 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L36 21 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L37 2 SEA SPE=ON ABB=ON PLU=ON L36 AND 2010-2011/PY
L38 2 SEA SPE=ON ABB=ON PLU=ON L37 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'EMBASE' ENTERED AT 13:17:00 ON 28 OCT 2019
CHARGED TO COST=108689

L39 4013 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L40 336 SEA SPE=ON ABB=ON PLU=ON L39 AND 2010-2011/PY
L41 335 SEA SPE=ON ABB=ON PLU=ON L40 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L42 5 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L43 0 SEA SPE=ON ABB=ON PLU=ON L42 AND 2010-2011/PY

FILE 'ESBIOBASE' ENTERED AT 13:18:05 ON 28 OCT 2019
CHARGED TO COST=108689
L44 4567 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L45 390 SEA SPE=ON ABB=ON PLU=ON L44 AND 2010-2011/PY
L46 390 SEA SPE=ON ABB=ON PLU=ON L45 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L47 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L48 0 SEA SPE=ON ABB=ON PLU=ON L47 AND 2010-2011/PY

FILE 'HCAPLUS' ENTERED AT 13:19:10 ON 28 OCT 2019
CHARGED TO COST=108689
L49 23450 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L50 3195 SEA SPE=ON ABB=ON PLU=ON L49 AND 2010-2011/PY
L51 896 SEA SPE=ON ABB=ON PLU=ON L50 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L52 59 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L53 6 SEA SPE=ON ABB=ON PLU=ON L52 AND 2010-2011/PY
L54 3 SEA SPE=ON ABB=ON PLU=ON L53 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'SCISEARCH' ENTERED AT 13:20:41 ON 28 OCT 2019
CHARGED TO COST=108689
L55 10341 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L56 820 SEA SPE=ON ABB=ON PLU=ON L55 AND 2010-2011/PY
L57 815 SEA SPE=ON ABB=ON PLU=ON L56 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L58 4 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L59 0 SEA SPE=ON ABB=ON PLU=ON L58 AND 2010-2011/PY

FILE 'TOXCENTER, HCAPLUS' ENTERED AT 13:28:27 ON 28 OCT 2019
CHARGED TO COST=108689
L60 3 DUP REM L38 L54 (2 DUPLICATES REMOVED)
ANSWERS '1-2' FROM FILE TOXCENTER
ANSWER '3' FROM FILE HCAPLUS
SAVE L60 GLY2SUBST/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 13:29:29 ON 28 OCT 2019
CHARGED TO COST=108689
L61 1955 DUP REM L3 L8 L13 L19 L24 L29 L35 L41 L46 L51 L57 (3980 DUPLICA
ANSWERS '1-249' FROM FILE MEDLINE
ANSWERS '250-535' FROM FILE AGRICOLA
ANSWERS '536-705' FROM FILE BIOSIS
ANSWERS '706-1209' FROM FILE CABA
ANSWERS '1210-1218' FROM FILE FSTA
ANSWERS '1219-1365' FROM FILE PQSCITECH
ANSWERS '1366-1544' FROM FILE TOXCENTER
ANSWERS '1545-1602' FROM FILE EMBASE
ANSWERS '1603-1619' FROM FILE ESBIOBASE
ANSWERS '1620-1799' FROM FILE HCAPLUS
ANSWERS '1800-1955' FROM FILE SCISEARCH
SAVE L61 GLY1SUBST/A
L62 1956 SEA SPE=ON ABB=ON PLU=ON L60 OR L61
L63 1349 SEA SPE=ON ABB=ON PLU=ON L62 AND TOX/Q
SAVE L63 GLYTOX/A
L64 1630 SEA SPE=ON ABB=ON PLU=ON L62 AND RES/Q
SAVE L64 GLYRES/A
L65 1015 SEA SPE=ON ABB=ON PLU=ON L61 AND FATE/Q
SAVE L65 GLYFATE/A
L66 1764 SEA SPE=ON ABB=ON PLU=ON L61 AND ECO/Q
SAVE L66 GLYECO/A
L67 1911 SEA SPE=ON ABB=ON PLU=ON L63 OR L64 OR L65 OR L66
SAVE L67 GLY201011/A
E301354C PRINT WZULEGER@KNOELL.COM N ALL

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 14:02:42 ON 28 OCT 2019

Appendix 4: ORIGINAL SEARCH QUERY - Part 1

FILE 'MEDLINE' ENTERED AT 12:21:51 ON 08 JUN 2018
CHARGED TO COST=108689

- L1 2816 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
- L2 1216 SEA SPE=ON ABB=ON PLU=ON L1 AND 2012-2017/PY
- L3 1186 SEA SPE=ON ABB=ON PLU=ON L2 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L3 GLY1MEDL/A
- L4 3 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
- L5 2 SEA SPE=ON ABB=ON PLU=ON L4 AND 2012-2017/PY
- L6 2 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L6 GLY2MEDL/A

FILE 'AGRICOLA' ENTERED AT 12:31:43 ON 08 JUN 2018
CHARGED TO COST=108689

- L7 6075 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
- L8 1482 SEA SPE=ON ABB=ON PLU=ON L7 AND 2012-2017/PY
- L9 1482 SEA SPE=ON ABB=ON PLU=ON L8 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L8 GLY1AGRI/A
- L10 1 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
- L11 1 SEA SPE=ON ABB=ON PLU=ON L10 AND 2012-2017/PY
- L12 1 SEA SPE=ON ABB=ON PLU=ON L11 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L12 GLY2AGRI/A

FILE 'BIOSIS' ENTERED AT 12:37:15 ON 08 JUN 2018
CHARGED TO COST=108689

- L13 9348 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
- L14 2599 SEA SPE=ON ABB=ON PLU=ON L13 AND 2012-2017/PY
- L15 2214 SEA SPE=ON ABB=ON PLU=ON L14 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L15 GLY1BIOS/A
- L16 4 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
- L17 2 SEA SPE=ON ABB=ON PLU=ON L16 AND 2012-2017/PY
- L18 2 SEA SPE=ON ABB=ON PLU=ON L17 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L18 GLY2BIOS/A

FILE 'CABA' ENTERED AT 12:40:03 ON 08 JUN 2018
CHARGED TO COST=108689

- L19 16954 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
- L20 3417 SEA SPE=ON ABB=ON PLU=ON L19 AND 2012-2017/PY
- L21 3416 SEA SPE=ON ABB=ON PLU=ON L20 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L21 GLY1CABA/A
- L22 2 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
- L23 2 SEA SPE=ON ABB=ON PLU=ON L22 AND 2012-2017/PY
- L24 2 SEA SPE=ON ABB=ON PLU=ON L23 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L24 GLY2CABA/A

FILE 'FSTA' ENTERED AT 12:45:13 ON 08 JUN 2018
CHARGED TO COST=108689

- L25 427 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR

GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC OR 1066-51-9

L26 181 SEA SPE=ON ABB=ON PLU=ON L25 AND 2012-2017/PY

L27 174 SEA SPE=ON ABB=ON PLU=ON L26 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
SAVE L27 GLY1FSTA/A

L28 3 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL PHOSPHONIC ACID OR 57637-97-5

L29 2 SEA SPE=ON ABB=ON PLU=ON L28 AND 2012-2017/PY

L30 2 SEA SPE=ON ABB=ON PLU=ON L29 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
SAVE L30 GLY2FSTA/A

FILE 'PQSCITECH' ENTERED AT 12:48:48 ON 08 JUN 2018
CHARGED TO COST=108689

L31 4671 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC OR 1066-51-9

L32 1171 SEA SPE=ON ABB=ON PLU=ON L31 AND 2012-2017/PY

L33 1043 SEA SPE=ON ABB=ON PLU=ON L32 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
SAVE L33 GLY1PQSCI/A

L34 1 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL PHOSPHONIC ACID OR 57637-97-5

L35 0 SEA SPE=ON ABB=ON PLU=ON L34 AND 2012-2017/PY

FILE 'TOXCENTER' ENTERED AT 12:51:18 ON 08 JUN 2018
CHARGED TO COST=108689

L36 12807 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC OR 1066-51-9

L37 4701 SEA SPE=ON ABB=ON PLU=ON L36 AND 2012-2017/PY

L38 2929 SEA SPE=ON ABB=ON PLU=ON L37 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
SAVE L38 GLY1TOXC/A

L39 16 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL PHOSPHONIC ACID OR 57637-97-5

L40 6 SEA SPE=ON ABB=ON PLU=ON L39 AND 2012-2017/PY

L41 6 SEA SPE=ON ABB=ON PLU=ON L40 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
SAVE L41 GLY2TOXC/A

FILE 'EMBASE' ENTERED AT 12:55:29 ON 08 JUN 2018
CHARGED TO COST=108689

L42 3332 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC OR 1066-51-9

L43 1399 SEA SPE=ON ABB=ON PLU=ON L42 AND 2012-2017/PY

L44 1388 SEA SPE=ON ABB=ON PLU=ON L43 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
SAVE L44 GLY1EMBAS/A

L45 2 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL PHOSPHONIC ACID OR 57637-97-5

L46 2 SEA SPE=ON ABB=ON PLU=ON L45 AND 2012-2017/PY

L47 2 SEA SPE=ON ABB=ON PLU=ON L46 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
SAVE L47 GLY2EMBAS/A

FILE 'ESBIOBASE' ENTERED AT 12:59:06 ON 08 JUN 2018
CHARGED TO COST=108689

L48 4062 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC OR 1066-51-9

L49 1424 SEA SPE=ON ABB=ON PLU=ON L48 AND 2012-2017/PY

L50 1420 SEA SPE=ON ABB=ON PLU=ON L49 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
SAVE L50 GLY1ESBIO/A

L51 1 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL

AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5

L52 1 SEA SPE=ON ABB=ON PLU=ON L51 AND 2012-2017/PY

L53 1 SEA SPE=ON ABB=ON PLU=ON L52 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L53 GLY2ESBIO/A

FILE 'HCAPLUS' ENTERED AT 13:06:10 ON 08 JUN 2018
CHARGED TO COST=108689

L54 21464 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9

L55 9051 SEA SPE=ON ABB=ON PLU=ON L54 AND 2012-2017/PY

L56 3028 SEA SPE=ON ABB=ON PLU=ON L55 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L56 GLY1HCAP/A

L57 49 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5

L58 15 SEA SPE=ON ABB=ON PLU=ON L57 AND 2012-2017/PY

L59 8 SEA SPE=ON ABB=ON PLU=ON L58 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L59 GLY2HCAP/A

FILE 'SCISEARCH' ENTERED AT 13:08:59 ON 08 JUN 2018
CHARGED TO COST=108689

L60 9189 SEA SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9

L61 3278 SEA SPE=ON ABB=ON PLU=ON L60 AND 2012-2017/PY

L62 3234 SEA SPE=ON ABB=ON PLU=ON L61 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L62 GLY1SCIS/A

L63 3 SEA SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5

L64 2 SEA SPE=ON ABB=ON PLU=ON L63 AND 2012-2017/PY

L65 2 SEA SPE=ON ABB=ON PLU=ON L64 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L65 GLY2SCIS/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, TOXCENTER, EMBASE,
ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 13:15:58 ON 08 JUN 2018
CHARGED TO COST=108689

L66 11 DUP REM L6 L12 L18 L24 L30 L41 L47 L53 L59 L65 (17 DUPLICATES R
ANSWERS '1-2' FROM FILE MEDLINE
ANSWER '3' FROM FILE CABA
ANSWER '4' FROM FILE FSTA
ANSWERS '5-6' FROM FILE TOXCENTER
ANSWERS '7-11' FROM FILE HCAPLUS
SAVE L66 GLY1/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 13:18:05 ON 08 JUN 2018
CHARGED TO COST=108689

L67 7119 DUP REM L3 L8 L15 L21 L27 L33 L38 L44 L50 L56 L62 (14395 DUPLIC
ANSWERS '1-1186' FROM FILE MEDLINE
ANSWERS '1187-2095' FROM FILE AGRICOLA
ANSWERS '2096-2843' FROM FILE BIOSIS
ANSWERS '2844-4456' FROM FILE CABA
ANSWERS '4457-4510' FROM FILE FSTA
ANSWERS '4511-4845' FROM FILE PQSCITECH
ANSWERS '4846-5504' FROM FILE TOXCENTER
ANSWERS '5505-5753' FROM FILE EMBASE
ANSWERS '5754-5800' FROM FILE ESBIOBASE
ANSWERS '5801-6426' FROM FILE HCAPLUS
ANSWERS '6427-7119' FROM FILE SCISEARCH

L68 7123 SEA SPE=ON ABB=ON PLU=ON L66 OR L67

L69 2786 SEA SPE=ON ABB=ON PLU=ON L68 AND (TOX? OR HAZARD? OR
ADVERSE OR HEALTH OR NOEL OR NOEL OR LOEL OR LOEL OR BMD? OR
IN VIVO OR IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR
SKIN? OR EYE? OR IRRIT? OR SENS? OR ALLERG?)

L70 2062 SEA SPE=ON ABB=ON PLU=ON L68 AND (RAT OR RATS OR DOG? OR
RABBIT? OR GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR
METABOLITE? OR METABOLIC OR DISTRIBUTION OR ADSORPTION OR
EXCRETION OR ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?)

L71 2897 SEA SPE=ON ABB=ON PLU=ON L68 AND (GEN? OR MUTA? OR CHROMOS?
OR CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR
TUMOUR? OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR
ENDOCRIN? OR HORMON? OR GONAD? OR DISRUPT?)

L72 2459 SEA SPE=ON ABB=ON PLU=ON L68 AND (REPRODUCT? OR DEVELOPMENT?
OR MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN?
OR PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
OCCUPAT?)

L73 793 SEA SPE=ON ABB=ON PLU=ON L68 AND (BIOMONITORING OR HUMAN
EXPOSURE OR MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR

- NECROSIS OR CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR RISK ASSESSMENT?)
- L74 5428 SEA SPE=ON ABB=ON PLU=ON (L69 OR L70 OR L71 OR L72 OR L73)
- SAVE L74 GLYTOX/A
- L75 2180 SEA SPE=ON ABB=ON PLU=ON L68 AND (UPTAKE OR TRANSLOCATION OR RUMEN OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING)
- L76 5121 SEA SPE=ON ABB=ON PLU=ON L68 AND (DESSICANT OR PREHARVEST OR PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED? OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?)
- L77 1847 SEA SPE=ON ABB=ON PLU=ON L68 AND (GOAT? OR COW? OR PIG? OR DIETARY OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE)
- L78 6170 SEA SPE=ON ABB=ON PLU=ON (L75 OR L76 OR L77)
- SAVE L78 GLYRES/A
- L79 2696 SEA SPE=ON ABB=ON PLU=ON L67 AND (SOIL OR WATER OR SEDIMENT OR DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER)
- L80 1145 SEA SPE=ON ABB=ON PLU=ON L67 AND (CONTAMINAT? OR MICROB? OR EXUDATION OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT)
- L81 1327 SEA SPE=ON ABB=ON PLU=ON L67 AND (TRANSPORT OR MICRONUTRIENT OR PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT PROCESSES)
- L82 1105 SEA SPE=ON ABB=ON PLU=ON L67 AND (ATMOSPHERIC DEPOSITION OR TILE-DRAINS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR PERSISTENCE OR LIGAND)
- L83 3895 SEA SPE=ON ABB=ON PLU=ON (L79 OR L80 OR L81 OR L82)
- SAVE L83 GLYFATE/A
- L84 4237 SEA SPE=ON ABB=ON PLU=ON L67 AND (TOX? OR ECOTOX? OR ?TOXIC OR ?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR PROTECTION GOALS OR ECO?)
- L85 3189 SEA SPE=ON ABB=ON PLU=ON L67 AND (IMPACT OR POPULATION OR COMMUNITY OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS? OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI? OR ALG? OR CHIRON?)
- L86 1935 SEA SPE=ON ABB=ON PLU=ON L67 AND (SEDIMENT DWELL? OR BENTHIC OR LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD ? OR INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR)
- L87 2102 SEA SPE=ON ABB=ON PLU=ON L67 AND (SOLITARY OR ALG? OR AQUATIC OR FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR PARASITOID)
- L88 1953 SEA SPE=ON ABB=ON PLU=ON L67 AND (PREDATOR OR CHRYSOPERLA OR ORIU? OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL? OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR NITROGEN)
- L89 3955 SEA SPE=ON ABB=ON PLU=ON L67 AND (PLANT? OR VEGETATIVE VIGO? OR SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB? OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL)
- L90 446 SEA SPE=ON ABB=ON PLU=ON L67 AND PLANT AND (SUBMERGE? OR EMERGE?)
- L91 6605 SEA SPE=ON ABB=ON PLU=ON (L84 OR L85 OR L86 OR L87 OR L88 OR L89 OR L90)
- SAVE L91 GLYECA/A
- L92 7031 SEA SPE=ON ABB=ON PLU=ON L74 OR L78 OR L83 OR L91
- SAVE L92 GLYFINAL/A

STN INTERNATIONAL SESSION SUSPENDED AT 14:17:00 ON 08 JUN 2018

Appendix 5: ORIGINAL SEARCH QUERY - Part 2a & 2b

FILE 'MEDLINE' ENTERED AT 13:56:20 ON 04 JUL 2019
CHARGED TO COST=108689

L1 QUE SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
SAVE L1 GLY1/Q

L2 QUE SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
SAVE L2 GLY2/Q

L3 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
EYE? OR IRRIT? OR SENSI? OR ALLERG?

L4 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?

L5 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
OR HORMON? OR GONAD? OR DISRUPT?

L6 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
OCCUPAT?

L7 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
RISK ASSESSMENT?

L8 QUE SPE=ON ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6 OR L7)
SAVE L8 TOX/Q

L9 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING

L10 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?

L11 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE

L12 QUE SPE=ON ABB=ON PLU=ON (L9 OR L10 OR L11)
SAVE L12 RES/Q

L13 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR
SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER

L14 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT

L15 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR
PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR
HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE
MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT
PROCESSES

L16 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAI
NS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR
OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER
OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR
PERSISTENCE OR LIGAND

L17 QUE SPE=ON ABB=ON PLU=ON (L13 OR L14 OR L15 OR L16)
SAVE L17 FATE/Q

L18 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR
?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR
BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR
EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR
PROTECTION GOALS OR ECO?

L19 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY
OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC
OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS?
OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI?
OR ALG? OR CHIRON?

L20 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR
LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR
INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR
APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR

L21 QUE SPE=ON ABB=ON PLU=ON PLANT AND (SUBMERGE? OR EMERGE?)

L22 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR
FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR
RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR
ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR
PARASITOID

L23 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIOUS
OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL?

- OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR
MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR
NITROGEN
- L24 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR
SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR
ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB?
OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL
- L25 QUE SPE=ON ABB=ON PLU=ON (L18 OR L19 OR L20 OR L21 OR L22
OR L23 OR L24)
SAVE L25 ECO/Q

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 14:25:17 ON 04 JUL 2019

Final search - publication year 2010-2011 and 2018:

FILE 'MEDLINE' ENTERED AT 13:20:48 ON 08 JUL 2019
CHARGED TO COST=108689

- L1 3202 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L2 602 SEA SPE=ON ABB=ON PLU=ON L1 AND (2010-2011/PY OR 2018/PY)
L3 582 SEA SPE=ON ABB=ON PLU=ON L2 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L3 GLY1MEDL/A
- L4 4 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L5 1 SEA SPE=ON ABB=ON PLU=ON L4 AND (2010-2011/PY OR 2018/PY)
L6 1 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L6 GLY2MEDL/A

FILE 'AGRICOLA' ENTERED AT 13:28:28 ON 08 JUL 2019
CHARGED TO COST=108689

- L7 6647 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L8 773 SEA SPE=ON ABB=ON PLU=ON L7 AND (2010-2011/PY OR 2018/PY)
L9 773 SEA SPE=ON ABB=ON PLU=ON L8 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L9 GLY1AGRI/A
- L10 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L11 0 SEA SPE=ON ABB=ON PLU=ON L10 AND (2010-2011/PY OR 2018/PY)

FILE 'BIOSIS' ENTERED AT 13:32:55 ON 08 JUL 2019
CHARGED TO COST=108689

- L12 10087 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L13 1325 SEA SPE=ON ABB=ON PLU=ON L12 AND (2010-2011/PY OR 2018/PY)
L14 1134 SEA SPE=ON ABB=ON PLU=ON L13 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L14 GLY1BIOS/A
- L15 5 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L16 3 SEA SPE=ON ABB=ON PLU=ON L15 AND (2010-2011/PY OR 2018/PY)
L17 1 SEA SPE=ON ABB=ON PLU=ON L16 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L17 GLY2BIOS/A

FILE 'CABA' ENTERED AT 13:35:53 ON 08 JUL 2019
CHARGED TO COST=108689

- L18 17709 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L19 1582 SEA SPE=ON ABB=ON PLU=ON L18 AND (2010-2011/PY OR 2018/PY)
L20 1581 SEA SPE=ON ABB=ON PLU=ON L19 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L20 GLY1CABA/A
- L21 3 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L22 0 SEA SPE=ON ABB=ON PLU=ON L21 AND (2010-2011/PY OR 2018/PY)

FILE 'FSTA' ENTERED AT 13:37:51 ON 08 JUL 2019
CHARGED TO COST=108689

- L23 459 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L24 72 SEA SPE=ON ABB=ON PLU=ON L23 AND (2010-2011/PY OR 2018/PY)
L25 70 SEA SPE=ON ABB=ON PLU=ON L24 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L25 GLY1FSTA/A
- L26 3 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L27 1 SEA SPE=ON ABB=ON PLU=ON L26 AND (2010-2011/PY OR 2018/PY)
L28 1 SEA SPE=ON ABB=ON PLU=ON L27 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L28 GLY2FSTA/A

FILE 'PQSCITECH' ENTERED AT 13:41:25 ON 08 JUL 2019
CHARGED TO COST=108689

- L29 4920 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L30 647 SEA SPE=ON ABB=ON PLU=ON L29 AND (2010-2011/PY OR 2018/PY)
L31 592 SEA SPE=ON ABB=ON PLU=ON L30 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L31 GLY1PQSCI/A
- L32 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L33 1 SEA SPE=ON ABB=ON PLU=ON L32 AND (2010-2011/PY OR 2018/PY)
L34 0 SEA SPE=ON ABB=ON PLU=ON L33 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'TOXCENTER' ENTERED AT 13:43:02 ON 08 JUL 2019
CHARGED TO COST=108689

- L35 13930 SEA SPE=ON ABB=ON PLU=ON GLY1/Q

L36 2526 SEA SPE=ON ABB=ON PLU=ON L35 AND (2010-2011/PY OR 2018/PY)
L37 1382 SEA SPE=ON ABB=ON PLU=ON L36 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L37 GLY1TOXC/A
L38 20 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L39 6 SEA SPE=ON ABB=ON PLU=ON L38 AND (2010-2011/PY OR 2018/PY)
L40 4 SEA SPE=ON ABB=ON PLU=ON L39 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L40 GLY2TOXC/A

FILE 'EMBASE' ENTERED AT 13:45:19 ON 08 JUL 2019
CHARGED TO COST=108689
L41 3877 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L42 719 SEA SPE=ON ABB=ON PLU=ON L41 AND (2010-2011/PY OR 2018/PY)
L43 714 SEA SPE=ON ABB=ON PLU=ON L42 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L43 GLY1EMBAS/A
L44 4 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L45 1 SEA SPE=ON ABB=ON PLU=ON L44 AND (2010-2011/PY OR 2018/PY)
L46 1 SEA SPE=ON ABB=ON PLU=ON L45 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L46 GLY2EMBAS/A

FILE 'ESBIOBASE' ENTERED AT 13:48:00 ON 08 JUL 2019
CHARGED TO COST=108689
L47 4278 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L48 773 SEA SPE=ON ABB=ON PLU=ON L47 AND (2010-2011/PY OR 2018/PY)
L49 771 SEA SPE=ON ABB=ON PLU=ON L48 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L49 GLY1ESBIO/A
L50 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L51 0 SEA SPE=ON ABB=ON PLU=ON L50 AND (2010-2011/PY OR 2018/PY)

FILE 'HCAPLUS' ENTERED AT 13:49:40 ON 08 JUL 2019
CHARGED TO COST=108689
L52 23049 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L53 5095 SEA SPE=ON ABB=ON PLU=ON L52 AND (2010-2011/PY OR 2018/PY)
L54 1407 SEA SPE=ON ABB=ON PLU=ON L53 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L54 GLY1HCAP/A
L55 57 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L56 13 SEA SPE=ON ABB=ON PLU=ON L55 AND (2010-2011/PY OR 2018/PY)
L57 6 SEA SPE=ON ABB=ON PLU=ON L56 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L57 GLY2HCAP/A

FILE 'SCISEARCH' ENTERED AT 13:52:17 ON 08 JUL 2019
CHARGED TO COST=108689
L58 10093 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L59 1608 SEA SPE=ON ABB=ON PLU=ON L58 AND (2010-2011/PY OR 2018/PY)
L60 1586 SEA SPE=ON ABB=ON PLU=ON L59 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L60 GLY1SCIS/A
L61 3 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L62 1 SEA SPE=ON ABB=ON PLU=ON L61 AND (2010-2011/PY OR 2018/PY)
L63 1 SEA SPE=ON ABB=ON PLU=ON L62 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE L63 GLY2SCIS/A

FILE 'STNGUIDE' ENTERED AT 13:57:54 ON 08 JUL 2019
CHARGED TO COST=108689

FILE 'MEDLINE, BIOSIS, FSTA, TOXCENTER, EMBASE, HCAPLUS, SCISEARCH'
ENTERED AT 14:06:02 ON 08 JUL 2019
CHARGED TO COST=108689
L64 7 DUP REM L6 L17 L28 L40 L46 L57 L63 (8 DUPLICATES REMOVED)
ANSWER '1' FROM FILE MEDLINE
ANSWERS '2-4' FROM FILE TOXCENTER
ANSWERS '5-7' FROM FILE HCAPLUS
SAVE L64 GLY2SUBST/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 14:07:06 ON 08 JUL 2019
CHARGED TO COST=108689
L65 3345 DUP REM L3 L9 L14 L20 L25 L31 L37 L43 L49 L54 L60 (7247 DUPLICA
ANSWERS '1-581' FROM FILE MEDLINE
ANSWERS '582-1050' FROM FILE AGRICOLA
ANSWERS '1051-1384' FROM FILE BIOSIS
ANSWERS '1385-2096' FROM FILE CABA
ANSWERS '2097-2115' FROM FILE FSTA
ANSWERS '2116-2314' FROM FILE PQSCITECH
ANSWERS '2315-2582' FROM FILE TOXCENTER
ANSWERS '2583-2709' FROM FILE EMBASE
ANSWERS '2710-2747' FROM FILE ESBIOBASE
ANSWERS '2748-3010' FROM FILE HCAPLUS
ANSWERS '3011-3345' FROM FILE SCISEARCH
SAVE L65 GLY1SUBST/A
D COST FUL
L66 3346 SEA SPE=ON ABB=ON PLU=ON L64 OR L65
L67 2492 SEA SPE=ON ABB=ON PLU=ON L66 AND TOX/Q
SAVE L67 GLYTOX/A
L68 2868 SEA SPE=ON ABB=ON PLU=ON L66 AND RES/Q

SAVE L68 GLYRES/A
L69 1831 SEA SPE=ON ABB=ON PLU=ON L65 AND FATE/Q
SAVE L69 GLYFATE/A
L70 3076 SEA SPE=ON ABB=ON PLU=ON L65 AND ECO/Q
SAVE L70 GLYECO/A
L71 3291 SEA SPE=ON ABB=ON PLU=ON L67 OR L68 OR L69 OR L70
SAVE L71 GLYFINALUPD/A

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 16:10:37 ON 08 JUL 2019

Final search - amendment of publication year 2019:

FILE 'MEDLINE' ENTERED AT 10:54:19 ON 10 JUL 2019
CHARGED TO COST=108689

L1 239 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L2 238 SEA SPE=ON ABB=ON PLU=ON L1 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L3 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY
L4 1 SEA SPE=ON ABB=ON PLU=ON L3 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'AGRICOLA' ENTERED AT 10:57:30 ON 10 JUL 2019
CHARGED TO COST=108689

L5 133 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L6 133 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L7 0 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY

FILE 'BIOSIS' ENTERED AT 10:58:37 ON 10 JUL 2019
CHARGED TO COST=108689

L8 252 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L9 240 SEA SPE=ON ABB=ON PLU=ON L8 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L10 0 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY

FILE 'CABA' ENTERED AT 10:59:24 ON 10 JUL 2019
CHARGED TO COST=108689

L11 106 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L12 106 SEA SPE=ON ABB=ON PLU=ON L11 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L13 0 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY

FILE 'FSTA' ENTERED AT 10:59:58 ON 10 JUL 2019
CHARGED TO COST=108689

L14 14 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L15 14 SEA SPE=ON ABB=ON PLU=ON L14 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L16 0 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY

FILE 'PQSCITECH' ENTERED AT 11:00:51 ON 10 JUL 2019
CHARGED TO COST=108689

L17 51 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L18 45 SEA SPE=ON ABB=ON PLU=ON L17 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L19 0 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY

FILE 'TOXCENTER' ENTERED AT 11:01:45 ON 10 JUL 2019
CHARGED TO COST=108689

L20 475 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L21 344 SEA SPE=ON ABB=ON PLU=ON L20 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L22 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY
L23 1 SEA SPE=ON ABB=ON PLU=ON L22 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'EMBASE' ENTERED AT 11:06:25 ON 10 JUL 2019
CHARGED TO COST=108689

L24 249 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L25 247 SEA SPE=ON ABB=ON PLU=ON L24 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L26 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY
L27 1 SEA SPE=ON ABB=ON PLU=ON L26 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'ESBIODBASE' ENTERED AT 11:07:10 ON 10 JUL 2019
CHARGED TO COST=108689

L28 186 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L29 185 SEA SPE=ON ABB=ON PLU=ON L28 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L30 0 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY

FILE 'HCAPLUS' ENTERED AT 11:08:31 ON 10 JUL 2019
CHARGED TO COST=108689

L31 1153 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY
L32 293 SEA SPE=ON ABB=ON PLU=ON L31 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L33 3 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY

L34 2 SEA SPE=ON ABB=ON PLU=ON L33 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'SCISEARCH' ENTERED AT 11:09:30 ON 10 JUL 2019
CHARGED TO COST=108689

L35 393 SEA SPE=ON ABB=ON PLU=ON GLY1/Q AND 2019/PY

L36 383 SEA SPE=ON ABB=ON PLU=ON L35 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L37 0 SEA SPE=ON ABB=ON PLU=ON GLY2/Q AND 2019/PY

FILE 'STNGUIDE' ENTERED AT 11:11:34 ON 10 JUL 2019
CHARGED TO COST=108689

FILE 'MEDLINE, TOXCENTER, EMBASE, HCAPLUS' ENTERED AT 11:14:41 ON 10 JUL
2019
CHARGED TO COST=108689

L38 3 DUP REM L4 L23 L27 L34 (2 DUPLICATES REMOVED)
ANSWER '1' FROM FILE MEDLINE
ANSWER '2' FROM FILE TOXCENTER
ANSWER '3' FROM FILE HCAPLUS
SAVE L38 GLY2SUB2019/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 11:15:55 ON 10 JUL 2019
CHARGED TO COST=108689

L39 706 DUP REM L2 L6 L9 L12 L15 L18 L21 L25 L29 L32 L36 (1522 DUPLICAT
ANSWERS '1-238' FROM FILE MEDLINE
ANSWERS '239-293' FROM FILE AGRICOLA
ANSWERS '294-397' FROM FILE BIOSIS
ANSWERS '398-416' FROM FILE CABA
ANSWERS '417-418' FROM FILE FSTA
ANSWERS '419-434' FROM FILE PQSCITECH
ANSWERS '435-498' FROM FILE TOXCENTER
ANSWERS '499-539' FROM FILE EMBASE
ANSWERS '540-555' FROM FILE ESBIOBASE
ANSWERS '556-601' FROM FILE HCAPLUS
ANSWERS '602-706' FROM FILE SCISEARCH
SAVE L39 GLY1SUB2019/A

L40 707 SEA SPE=ON ABB=ON PLU=ON L38 OR L39

L41 623 SEA SPE=ON ABB=ON PLU=ON L40 AND TOX/Q
SAVE L41 GLYTOX2019/A

L42 613 SEA SPE=ON ABB=ON PLU=ON L40 AND RES/Q
SAVE L42 GLYRES2019/A

L43 445 SEA SPE=ON ABB=ON PLU=ON L39 AND FATE/Q
SAVE L43 GLYFATE2019/A

L44 677 SEA SPE=ON ABB=ON PLU=ON L39 AND ECO/Q
SAVE L44 GLYECO2019/A

L45 703 SEA SPE=ON ABB=ON PLU=ON L41 OR L42 OR L43 OR L44
SAVE L45 GLYFINAL2019/A

ACT GLYFINALUPD/A

L46(7)DUP REM L46 L46 L46 L46 L46 L46 (8 DUPLICATES REMOVE

L47(3345)DUP REM L46 L46 L46 L46 L46 L46 L46 L46 L46 L46

L48(1)SEA FILE=MEDLINE L46

L49(581)SEA FILE=MEDLINE L47

L50(581)SEA FILE=MEDLINE L48 OR L49

L51(0)SEA FILE=AGRICOLA L46

L52(469)SEA FILE=AGRICOLA L47

L53(469)SEA FILE=AGRICOLA L51 OR L52

L54(0)SEA FILE=BIOSIS L46

L55(334)SEA FILE=BIOSIS L47

L56(334)SEA FILE=BIOSIS L54 OR L55

L57(0)SEA FILE=CABA L46

L58(712)SEA FILE=CABA L47

L59(712)SEA FILE=CABA L57 OR L58

L60(0)SEA FILE=FSTA L46

L61(19)SEA FILE=FSTA L47

L62(19)SEA FILE=FSTA L60 OR L61

L63(0)SEA FILE=PQSCITECH L46

L64(199)SEA FILE=PQSCITECH L47

L65(199)SEA FILE=PQSCITECH L63 OR L64

L66(3)SEA FILE=TOXCENTER L46

L67(268)SEA FILE=TOXCENTER L47

L68(269)SEA FILE=TOXCENTER L66 OR L67

L69(0)SEA FILE=EMBASE L46

L70(127)SEA FILE=EMBASE L47

L71(127)SEA FILE=EMBASE L69 OR L70

L72(0)SEA FILE=ESBIOBASE L46

L73(38)SEA FILE=ESBIOBASE L47

L74(38)SEA FILE=ESBIOBASE L72 OR L73

L75(3)SEA FILE=HCAPLUS L46

L76(263)SEA FILE=HCAPLUS L47

L77(263)SEA FILE=HCAPLUS L75 OR L76

L78(0)SEA FILE=SCISEARCH L46

L79(335)SEA FILE=SCISEARCH L47

L80(335)SEA FILE=SCISEARCH L78 OR L79

L81(3346)SEA L46 OR L47

L82(545)SEA FILE=MEDLINE L50 AND TOX/Q

L83(315)SEA FILE=AGRICOLA L53 AND TOX/Q

L84(255)SEA FILE=BIOSIS L56 AND TOX/Q

L85(461)SEA FILE=CABA L59 AND TOX/Q

L86(17)SEA FILE=FSTA L62 AND TOX/Q

L87(112)SEA FILE=PQSCITECH L65 AND TOX/Q

L88(214)SEA FILE=TOXCENTER L68 AND TOX/Q

L89(121)SEA FILE=EMBASE L71 AND TOX/Q

L90(28)SEA FILE=ESBIOBASE L74 AND TOX/Q

L91(175)SEA FILE=HCAPLUS L77 AND TOX/Q

L92(249)SEA FILE=SCISEARCH L80 AND TOX/Q

L93(2492)SEA L81 AND TOX/Q
L94(518)SEA FILE=MEDLINE L50 AND RES/Q
L95(415)SEA FILE=AGRICOLA L53 AND RES/Q
L96(326)SEA FILE=BIOSIS L56 AND RES/Q
L97(699)SEA FILE=CABA L59 AND RES/Q
L98(18)SEA FILE=FSTA L62 AND RES/Q
L99(134)SEA FILE=PQSCITECH L65 AND RES/Q
L100(201)SEA FILE=TOXCENTER L68 AND RES/Q
L101(106)SEA FILE=EMBASE L71 AND RES/Q
L102(31)SEA FILE=ESBIOBASE L74 AND RES/Q
L103(160)SEA FILE=HCAPLUS L77 AND RES/Q
L104(260)SEA FILE=SCISEARCH L80 AND RES/Q
L105(2868)SEA L81 AND RES/Q
L106(581)SEA FILE=MEDLINE L47
L107(401)SEA FILE=MEDLINE L106 AND FATE/Q
L108(469)SEA FILE=AGRICOLA L47
L109(245)SEA FILE=AGRICOLA L108 AND FATE/Q
L110(334)SEA FILE=BIOSIS L47
L111(183)SEA FILE=BIOSIS L110 AND FATE/Q
L112(712)SEA FILE=CABA L47
L113(327)SEA FILE=CABA L112 AND FATE/Q
L114(19)SEA FILE=FSTA L47
L115(6)SEA FILE=FSTA L114 AND FATE/Q
L116(199)SEA FILE=PQSCITECH L47
L117(83)SEA FILE=PQSCITECH L116 AND FATE/Q
L118(268)SEA FILE=TOXCENTER L47
L119(166)SEA FILE=TOXCENTER L118 AND FATE/Q
L120(127)SEA FILE=EMBASE L47
L121(51)SEA FILE=EMBASE L120 AND FATE/Q
L122(38)SEA FILE=ESBIOBASE L47
L123(16)SEA FILE=ESBIOBASE L122 AND FATE/Q
L124(263)SEA FILE=HCAPLUS L47
L125(165)SEA FILE=HCAPLUS L124 AND FATE/Q
L126(335)SEA FILE=SCISEARCH L47
L127(188)SEA FILE=SCISEARCH L126 AND FATE/Q
L128(1831)SEA L47 AND FATE/Q
L129(581)SEA FILE=MEDLINE L47
L130(556)SEA FILE=MEDLINE L129 AND ECO/Q
L131(469)SEA FILE=AGRICOLA L47
L132(433)SEA FILE=AGRICOLA L131 AND ECO/Q
L133(334)SEA FILE=BIOSIS L47
L134(334)SEA FILE=BIOSIS L133 AND ECO/Q
L135(712)SEA FILE=CABA L47
L136(707)SEA FILE=CABA L135 AND ECO/Q
L137(19)SEA FILE=FSTA L47
L138(17)SEA FILE=FSTA L137 AND ECO/Q
L139(199)SEA FILE=PQSCITECH L47
L140(142)SEA FILE=PQSCITECH L139 AND ECO/Q
L141(268)SEA FILE=TOXCENTER L47
L142(245)SEA FILE=TOXCENTER L141 AND ECO/Q
L143(127)SEA FILE=EMBASE L47
L144(114)SEA FILE=EMBASE L143 AND ECO/Q
L145(38)SEA FILE=ESBIOBASE L47
L146(32)SEA FILE=ESBIOBASE L145 AND ECO/Q
L147(263)SEA FILE=HCAPLUS L47
L148(198)SEA FILE=HCAPLUS L147 AND ECO/Q
L149(335)SEA FILE=SCISEARCH L47
L150(298)SEA FILE=SCISEARCH L149 AND ECO/Q
L151(3076)SEA L47 AND ECO/Q
L152 581 SEA L82 OR L94 OR L107 OR L130
L153 466 SEA L83 OR L95 OR L109 OR L132
L154 334 SEA L84 OR L96 OR L111 OR L134
L155 711 SEA L85 OR L97 OR L113 OR L136
L156 19 SEA L86 OR L98 OR L115 OR L138
L157 182 SEA L87 OR L99 OR L117 OR L140
L158 265 SEA L88 OR L100 OR L119 OR L142
L159 125 SEA L89 OR L101 OR L121 OR L144
L160 38 SEA L90 OR L102 OR L123 OR L146
L161 248 SEA L91 OR L103 OR L125 OR L148
L162 322 SEA L92 OR L104 OR L127 OR L150
L163 3291 SEA SPE=ON ABB=ON PLU=ON L93 OR L105 OR L128 OR L151

L164 3994 SEA SPE=ON ABB=ON PLU=ON L163 OR L45
SAVE L164 GLYFINALMERG/A
L165 1909 SEA SPE=ON ABB=ON PLU=ON L164 AND 2010-2011/PY
SAVE L165 GLY201011/A
L166 2085 SEA SPE=ON ABB=ON PLU=ON L164 NOT L165
SAVE L166 GLY201819/A
E191244C PRINT WZULEGER@KNOELL.COM N ALL

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 12:24:27 ON 10 JUL 2019

Appendix 6: ORIGINAL SEARCH QUERY - Part 3

FILE 'MEDLINE' ENTERED AT 13:55:43 ON 06 JAN 2020
CHARGED TO COST=108689

L1 QUE SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
SAVE TEMP L1 GLY1/Q

L2 QUE SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
SAVE TEMP L2 GLY2/Q

L3 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
EYE? OR IRRIT? OR SENSI? OR ALLERG?

L4 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?

L5 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
OR HORMON? OR GONAD? OR DISRUPT?

L6 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
OCCUPAT?

L7 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
RISK ASSESSMENT?

L8 QUE SPE=ON ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6 OR L7)
SAVE TEMP L8 TOX/Q

L9 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING

L10 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?

L11 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE

L12 QUE SPE=ON ABB=ON PLU=ON (L9 OR L10 OR L11)
SAVE TEMP L12 RES/Q

L13 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR
SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER

L14 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT

L15 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR
PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR
HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE
MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT
PROCESSES

L16 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAI
NS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR
OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER
OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR
PERSISTENCE OR LIGAND

L17 QUE SPE=ON ABB=ON PLU=ON (L13 OR L14 OR L15 OR L16)
SAVE TEMP L17 FATE/Q

L18 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR
?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR
BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR
EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR
PROTECTION GOALS OR ECO?

L19 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY
OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC
OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS?
OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI?
OR ALG? OR CHIRON?

L20 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR
LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR
INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR
APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR

L21 QUE SPE=ON ABB=ON PLU=ON PLANT AND (SUBMERGE? OR EMERGE?)

L22 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR
FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR
RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR
ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR
PARASITOID

L23 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIUUS
OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL?
OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR
MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR
NITROGEN

L24 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR
SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR

ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB?
OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL
L25 QUE SPE=ON ABB=ON PLU=ON (L18 OR L19 OR L20 OR L21 OR L22
OR L23 OR L24)
SAVE TEMP L25 ECO/Q

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 14:08:39 ON 06 JAN 2020

' Final search - publications from 11 July 2019 onwards:

FILE 'MEDLINE' ENTERED AT 17:48:32 ON 07 JAN 2020
CHARGED TO COST=108689
L1 3389 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L2 185 SEA SPE=ON ABB=ON PLU=ON L1 AND ED>20190710
L3 184 SEA SPE=ON ABB=ON PLU=ON L2 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L4 5 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L5 1 SEA SPE=ON ABB=ON PLU=ON L4 AND ED>20190710
L6 1 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'AGRICOLA' ENTERED AT 17:51:29 ON 07 JAN 2020
CHARGED TO COST=108689
L7 6837 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L8 179 SEA SPE=ON ABB=ON PLU=ON L7 AND ED>20190710
L9 179 SEA SPE=ON ABB=ON PLU=ON L8 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L10 3 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L11 2 SEA SPE=ON ABB=ON PLU=ON L10 AND ED>20190710
L12 2 SEA SPE=ON ABB=ON PLU=ON L11 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'BIOSIS' ENTERED AT 17:52:39 ON 07 JAN 2020
CHARGED TO COST=108689
L13 10344 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L14 249 SEA SPE=ON ABB=ON PLU=ON L13 AND ED>20190710
L15 222 SEA SPE=ON ABB=ON PLU=ON L14 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L16 8 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L17 3 SEA SPE=ON ABB=ON PLU=ON L16 AND ED>20190710
L18 2 SEA SPE=ON ABB=ON PLU=ON L17 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'CABA' ENTERED AT 17:54:08 ON 07 JAN 2020
CHARGED TO COST=108689
L19 18097 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L20 375 SEA SPE=ON ABB=ON PLU=ON L19 AND ED>20190710
L21 375 SEA SPE=ON ABB=ON PLU=ON L20 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L22 5 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L23 2 SEA SPE=ON ABB=ON PLU=ON L22 AND ED>20190710
L24 2 SEA SPE=ON ABB=ON PLU=ON L23 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'FSTA' ENTERED AT 17:55:25 ON 07 JAN 2020
CHARGED TO COST=108689
L25 485 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L26 26 SEA SPE=ON ABB=ON PLU=ON L25 AND ED>20190710
L27 26 SEA SPE=ON ABB=ON PLU=ON L26 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L28 4 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L29 1 SEA SPE=ON ABB=ON PLU=ON L28 AND ED>20190710
L30 1 SEA SPE=ON ABB=ON PLU=ON L29 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'PQSCITECH' ENTERED AT 17:56:15 ON 07 JAN 2020
CHARGED TO COST=108689
L31 5023 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L32 106 SEA SPE=ON ABB=ON PLU=ON L31 AND ED>20190710
L33 100 SEA SPE=ON ABB=ON PLU=ON L32 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L34 1 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L35 0 SEA SPE=ON ABB=ON PLU=ON L34 AND ED>20190710

FILE 'TOXCENTER' ENTERED AT 17:57:14 ON 07 JAN 2020
CHARGED TO COST=108689
L36 14513 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L37 538 SEA SPE=ON ABB=ON PLU=ON L36 AND ED>20190710
L38 380 SEA SPE=ON ABB=ON PLU=ON L37 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L39 21 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L40 1 SEA SPE=ON ABB=ON PLU=ON L39 AND ED>20190710
L41 1 SEA SPE=ON ABB=ON PLU=ON L40 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'EMBASE' ENTERED AT 17:58:52 ON 07 JAN 2020
CHARGED TO COST=108689
L42 4107 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L43 159 SEA SPE=ON ABB=ON PLU=ON L42 AND ED>20190710
L44 158 SEA SPE=ON ABB=ON PLU=ON L43 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L45 5 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L46 1 SEA SPE=ON ABB=ON PLU=ON L45 AND ED>20190710
L47 1 SEA SPE=ON ABB=ON PLU=ON L46 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'ESBIOBASE' ENTERED AT 18:00:01 ON 07 JAN 2020
CHARGED TO COST=108689
L48 4632 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L49 163 SEA SPE=ON ABB=ON PLU=ON L48 AND ED>20190710

L50 162 SEA SPE=ON ABB=ON PLU=ON L49 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L51 2 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L52 1 SEA SPE=ON ABB=ON PLU=ON L51 AND ED>20190710
L53 1 SEA SPE=ON ABB=ON PLU=ON L52 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'HCAPLUS' ENTERED AT 18:04:42 ON 07 JAN 2020
CHARGED TO COST=108689

L54 23833 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L55 688 SEA SPE=ON ABB=ON PLU=ON L54 AND ED>20190710
L56 338 SEA SPE=ON ABB=ON PLU=ON L55 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L57 59 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L58 1 SEA SPE=ON ABB=ON PLU=ON L57 AND ED>20190710
L59 1 SEA SPE=ON ABB=ON PLU=ON L58 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'SCISEARCH' ENTERED AT 18:07:02 ON 07 JAN 2020
CHARGED TO COST=108689

L60 10481 SEA SPE=ON ABB=ON PLU=ON GLY1/Q
L61 375 SEA SPE=ON ABB=ON PLU=ON L60 AND ED>20190710
L62 365 SEA SPE=ON ABB=ON PLU=ON L61 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
L63 7 SEA SPE=ON ABB=ON PLU=ON GLY2/Q
L64 4 SEA SPE=ON ABB=ON PLU=ON L63 AND ED>20190710
L65 4 SEA SPE=ON ABB=ON PLU=ON L64 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, TOXCENTER, EMBASE,
ESBIODBASE, HCAPLUS, SCISEARCH' ENTERED AT 18:14:15 ON 07 JAN 2020
CHARGED TO COST=108689

L66 7 DUP REM L6 L12 L18 L24 L30 L41 L47 L53 L59 L65 (9 DUPLICATES RE
ANSWER '1' FROM FILE MEDLINE
ANSWERS '2-3' FROM FILE AGRICOLA
ANSWER '4' FROM FILE CABA
ANSWER '5' FROM FILE HCAPLUS
ANSWERS '6-7' FROM FILE SCISEARCH
SAVE L66 GLY2SUB/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIODBASE, HCAPLUS, SCISEARCH' ENTERED AT 18:15:40 ON 07 JAN 2020
CHARGED TO COST=108689

L67 1372 DUP REM L3 L9 L15 L21 L27 L33 L38 L44 L50 L56 L62 (1117 DUPLICA
ANSWERS '1-184' FROM FILE MEDLINE
ANSWERS '185-347' FROM FILE AGRICOLA
ANSWERS '348-482' FROM FILE BIOSIS
ANSWERS '483-762' FROM FILE CABA
ANSWERS '763-777' FROM FILE FSTA
ANSWERS '778-862' FROM FILE PQSCITECH
ANSWERS '863-1005' FROM FILE TOXCENTER
ANSWERS '1006-1073' FROM FILE EMBASE
ANSWERS '1074-1112' FROM FILE ESBIODBASE
ANSWERS '1113-1234' FROM FILE HCAPLUS
ANSWERS '1235-1372' FROM FILE SCISEARCH
SAVE L67 GLY1SUB/A

L68 1372 SEA SPE=ON ABB=ON PLU=ON L66 OR L67
L69 1111 SEA SPE=ON ABB=ON PLU=ON L68 AND TOX/Q
SAVE L69 GLY12TOX/A
L70 1214 SEA SPE=ON ABB=ON PLU=ON L68 AND RES/Q
SAVE L70 GLY12RES/A
L71 838 SEA SPE=ON ABB=ON PLU=ON L67 AND FATE/Q
SAVE L71 GLY1FATE/A
L72 1288 SEA SPE=ON ABB=ON PLU=ON L67 AND ECO/Q
SAVE L72 GLY1ECO/A
L73 1364 SEA SPE=ON ABB=ON PLU=ON L69 OR L70 OR L71 OR L72
SAVE L73 GLY2020TOP/A
E007060C PRINT WZULEGER@KNOELL.COM N ALL

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 19:37:21 ON 07 JAN 2020

Appendix 7: ORIGINAL SEARCH QUERY - Part 4

FILE 'MEDLINE' ENTERED AT 12:25:23 ON 24 FEB 2020
CHARGED TO COST=108689

- L1 31 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L2 12 SEA SPE=ON ABB=ON PLU=ON L1 AND 2010-2020/PY
L3 12 SEA SPE=ON ABB=ON PLU=ON L2 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'AGRICOLA' ENTERED AT 12:28:44 ON 24 FEB 2020
CHARGED TO COST=108689

- L4 4 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L5 4 SEA SPE=ON ABB=ON PLU=ON L4 AND 2010-2020/PY
L6 4 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'BIOSIS' ENTERED AT 12:30:18 ON 24 FEB 2020
CHARGED TO COST=108689

- L7 29 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L8 11 SEA SPE=ON ABB=ON PLU=ON L7 AND 2010-2020/PY
L9 10 SEA SPE=ON ABB=ON PLU=ON L8 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'CABA' ENTERED AT 12:31:01 ON 24 FEB 2020
CHARGED TO COST=108689

- L10 5 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L11 3 SEA SPE=ON ABB=ON PLU=ON L10 AND 2010-2020/PY
L12 3 SEA SPE=ON ABB=ON PLU=ON L11 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'FSTA' ENTERED AT 12:31:41 ON 24 FEB 2020
CHARGED TO COST=108689

- L13 1 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L14 1 SEA SPE=ON ABB=ON PLU=ON L13 AND 2010-2020/PY
L15 1 SEA SPE=ON ABB=ON PLU=ON L14 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'PQSCITECH' ENTERED AT 12:32:38 ON 24 FEB 2020
CHARGED TO COST=108689

- L16 24 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L17 6 SEA SPE=ON ABB=ON PLU=ON L16 AND 2010-2020/PY
L18 3 SEA SPE=ON ABB=ON PLU=ON L17 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'TOXCENTER' ENTERED AT 12:33:06 ON 24 FEB 2020
CHARGED TO COST=108689

- L19 84 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L20 29 SEA SPE=ON ABB=ON PLU=ON L19 AND 2010-2020/PY
L21 19 SEA SPE=ON ABB=ON PLU=ON L20 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'EMBASE' ENTERED AT 12:34:03 ON 24 FEB 2020
CHARGED TO COST=108689

- L22 48 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L23 22 SEA SPE=ON ABB=ON PLU=ON L22 AND 2010-2020/PY
L24 22 SEA SPE=ON ABB=ON PLU=ON L23 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'ESBIOBASE' ENTERED AT 12:35:13 ON 24 FEB 2020
CHARGED TO COST=108689

L25 15 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L26 10 SEA SPE=ON ABB=ON PLU=ON L25 AND 2010-2020/PY
L27 10 SEA SPE=ON ABB=ON PLU=ON L26 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'HCAPLUS' ENTERED AT 12:36:33 ON 24 FEB 2020
CHARGED TO COST=108689

L28 694 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L29 197 SEA SPE=ON ABB=ON PLU=ON L28 AND 2010-2020/PY
L30 83 SEA SPE=ON ABB=ON PLU=ON L29 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L31 28 SEA SPE=ON ABB=ON PLU=ON L30 NOT PREP/RL

FILE 'SCISEARCH' ENTERED AT 12:38:57 ON 24 FEB 2020
CHARGED TO COST=108689

L32 67 SEA SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL OR HYDROXYMETHYLPHOSPHONATE
OR HYDROXYMETHYLPHOSPHONIC ACID
L33 22 SEA SPE=ON ABB=ON PLU=ON L32 AND 2010-2020/PY
L34 22 SEA SPE=ON ABB=ON PLU=ON L33 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 12:43:26 ON 24 FEB 2020
CHARGED TO COST=108689

L35 58 DUP REM L3 L6 L9 L12 L15 L18 L21 L24 L27 L31 L34 (76 DUPLICATES
ANSWERS '1-12' FROM FILE MEDLINE
ANSWER '13' FROM FILE AGRICOLA
ANSWER '14' FROM FILE BIOSIS
ANSWER '15' FROM FILE PQSCITECH
ANSWERS '16-25' FROM FILE TOXCENTER
ANSWERS '26-34' FROM FILE EMBASE
ANSWER '35' FROM FILE ESBIOBASE
ANSWERS '36-50' FROM FILE HCAPLUS
ANSWERS '51-58' FROM FILE SCISEARCH
SAVE TEMP L35 GLYHMPASUBST/A
D ALL 1-35
D 36-58

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 12:52:59 ON 24 FEB 2020

Appendix 8: ORIGINAL SEARCH QUERY - Part 5a & 5b

FILE 'MEDLINE' ENTERED AT 19:52:46 ON 26 FEB 2020
CHARGED TO COST=108689

L1 QUE SPE=ON ABB=ON PLU=ON 35404-71-8 OR METHYLAMINO METHYL
 PHOSPHONIC ACID OR METHYLAMINOMETHYL PHOSPHONIC ACID OR
 METHYLAMINOMETHYLPHOSPHONIC ACID OR N METHYL AMPA OR NSC
 244826 OR PHOSPHONIC ACID METHYLAMINO METHYL OR PHOSPHONIC
 ACID P METHYLAMINO METHYL
 SAVE TEMP L1 MET1/Q

L2 QUE SPE=ON ABB=ON PLU=ON 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETH
 YL PHOSPHONIC ACID OR 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETHYLPHOS
 PHONIC ACID OR N GLYCERYL AMPA
 SAVE TEMP L2 MET2/Q

L3 QUE SPE=ON ABB=ON PLU=ON 3 OXO 3 PHOSPHONOMETHYL AMINO
 PROPANOIC ACID OR 3 OXO 3 PHOSPHONOMETHYL AMINOPROPANOIC ACID
 OR N MALONYL AMPA
 SAVE TEMP L3 MET3/Q

L4 QUE SPE=ON ABB=ON PLU=ON 993-13-5 OR DIHYDROGEN METHYLPHOSPH
 ONATE OR METHANEPHOSPHONIC ACID OR METHYL PHOSPHONIC ACID OR
 METHYLPHOSPHONIC ACID OR NSC 119358 OR PHOSPHONIC ACID METHYL
 OR PHOSPHONIC ACID P METHYL
 SAVE TEMP L4 MET4/Q

L5 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
 HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
 IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
 EYE? OR IRRIT? OR SENS? OR ALLERG?

L6 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
 GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
 METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
 ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?

L7 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
 CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
 OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
 OR HORMON? OR GONAD? OR DISRUPT?

L8 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
 MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
 PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
 EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
 OCCUPAT?

L9 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
 MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
 CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
 RISK ASSESSMENT?

L10 QUE SPE=ON ABB=ON PLU=ON (L5 OR L6 OR L7 OR L8 OR L9)
 SAVE TEMP L10 TOX/Q

L11 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
 OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
 METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
 MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING

L12 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
 PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
 HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
 OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?

L13 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
 OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE

L14 QUE SPE=ON ABB=ON PLU=ON (L11 OR L12 OR L13)
 SAVE TEMP L14 RES/Q

L15 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
 DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR
 SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
 AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER

L16 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
 OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
 OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
 ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT

L17 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR
 PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR
 HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE
 MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT
 PROCESSES

L18 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAI
 NS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR
 OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER
 OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR
 PERSISTENCE OR LIGAND

L19 QUE SPE=ON ABB=ON PLU=ON (L15 OR L16 OR L17 OR L18)
 SAVE TEMP L19 FATE/Q

L20 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR
 ?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR
 BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR
 EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR
 PROTECTION GOALS OR ECO?

L21 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY
 OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC
 OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS?
 OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI?
 OR ALG? OR CHIRON?

L22 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR
 LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR
 INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR
 APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR

L23 QUE SPE=ON ABB=ON PLU=ON PLANT AND (SUBMERGE? OR EMERGE?)

L24 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR
 FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR
 RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR
 ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR
 PARASITOID

L25 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIU
 S OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL?

OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR
MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR
NITROGEN
L26 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR
SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR
ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB?
OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL
L27 QUE SPE=ON ABB=ON PLU=ON (L20 OR L21 OR L22 OR L23 OR L24
OR L25 OR L26)
SAVE TEMP L27 ECO/Q

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 20:06:32 ON 26 FEB 2020

' Final search - publication year 2010-2020:

FILE 'MEDLINE' ENTERED AT 10:09:43 ON 27 FEB 2020
CHARGED TO COST=108689

L1 1 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L2 1 SEA SPE=ON ABB=ON PLU=ON L1 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L3 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L4 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L5 199 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L6 198 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L2 MEDLMET123/A
SAVE TEMP L6 MEDLMET4/A

FILE 'AGRICOLA' ENTERED AT 10:18:08 ON 27 FEB 2020
CHARGED TO COST=108689

L7 0 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L8 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L9 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L10 91 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L11 91 SEA SPE=ON ABB=ON PLU=ON L10 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L11 AGRIMET4/A

FILE 'BIOSIS' ENTERED AT 10:20:50 ON 27 FEB 2020
CHARGED TO COST=108689

L12 1 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L13 1 SEA SPE=ON ABB=ON PLU=ON L12 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L14 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L15 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L16 174 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L17 150 SEA SPE=ON ABB=ON PLU=ON L16 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L13 BIOSMET123/A
SAVE TEMP L17 BIOSMET4/A

FILE 'CABA' ENTERED AT 10:24:39 ON 27 FEB 2020
CHARGED TO COST=108689

L18 0 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L19 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L20 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L21 36 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L22 36 SEA SPE=ON ABB=ON PLU=ON L21 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L22 CABAMET4/A

FILE 'FSTA' ENTERED AT 10:28:39 ON 27 FEB 2020
CHARGED TO COST=108689

L23 0 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L24 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L25 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L26 3 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L27 2 SEA SPE=ON ABB=ON PLU=ON L26 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L27 FSTAMET4/A

FILE 'PQSCITECH' ENTERED AT 10:29:50 ON 27 FEB 2020
CHARGED TO COST=108689

L28 0 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L29 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L30 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L31 74 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L32 72 SEA SPE=ON ABB=ON PLU=ON L31 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L32 PQSCIMET4/A

FILE 'TOXCENTER' ENTERED AT 10:31:16 ON 27 FEB 2020
CHARGED TO COST=108689

L33 6 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L34 4 SEA SPE=ON ABB=ON PLU=ON L33 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L35 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L36 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L37 455 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L38 353 SEA SPE=ON ABB=ON PLU=ON L37 NOT (COMMENT? OR DISSERTATION

OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L34 TOXCMET123/A
SAVE TEMP L38 TOXCMET4/A

FILE 'EMBASE' ENTERED AT 10:34:46 ON 27 FEB 2020
CHARGED TO COST=108689
L39 1 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L40 1 SEA SPE=ON ABB=ON PLU=ON L39 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L41 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L42 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L43 427 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L44 426 SEA SPE=ON ABB=ON PLU=ON L43 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L40 EMBAMET123/A
SAVE TEMP L44 EMBAMET4/A

FILE 'ESBIODBASE' ENTERED AT 10:38:15 ON 27 FEB 2020
CHARGED TO COST=108689
L45 1 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L46 1 SEA SPE=ON ABB=ON PLU=ON L45 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L47 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L48 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L49 58 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L50 58 SEA SPE=ON ABB=ON PLU=ON L49 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L46 ESBIMET123/A
SAVE TEMP L50 ESBIMET4/A

FILE 'HCAPLUS' ENTERED AT 10:46:20 ON 27 FEB 2020
CHARGED TO COST=108689
L51 11 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L52 4 SEA SPE=ON ABB=ON PLU=ON L51 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L53 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L54 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L55 1187 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L56 616 SEA SPE=ON ABB=ON PLU=ON L55 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L52 HCAPMET123/A
SAVE TEMP L56 HCAPMET4/A

FILE 'SCISEARCH' ENTERED AT 10:49:48 ON 27 FEB 2020
CHARGED TO COST=108689
L57 1 SEA SPE=ON ABB=ON PLU=ON MET1/Q AND 2010-2020/PY
L58 0 SEA SPE=ON ABB=ON PLU=ON MET2/Q AND 2010-2020/PY
L59 0 SEA SPE=ON ABB=ON PLU=ON MET3/Q AND 2010-2020/PY
L60 329 SEA SPE=ON ABB=ON PLU=ON MET4/Q AND 2010-2020/PY
L61 329 SEA SPE=ON ABB=ON PLU=ON L60 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L62 1 SEA SPE=ON ABB=ON PLU=ON L57 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L62 SCISMET123/A
SAVE TEMP L61 SCISMET4/A

FILE 'STNGUIDE' ENTERED AT 10:56:13 ON 27 FEB 2020
CHARGED TO COST=108689

FILE 'MEDLINE, BIOSIS, TOXCENTER, EMBASE, ESBIODBASE, HCAPLUS, SCISEARCH'
ENTERED AT 11:06:41 ON 27 FEB 2020
CHARGED TO COST=108689
L63 4 DUP REM L2 L13 L34 L40 L46 L52 L62 (9 DUPLICATES REMOVED)
ANSWER '1' FROM FILE MEDLINE
ANSWER '2' FROM FILE TOXCENTER
ANSWERS '3-4' FROM FILE HCAPLUS
SAVE L63 MET123SUB/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIODBASE, HCAPLUS, SCISEARCH' ENTERED AT 11:07:19 ON 27 FEB 2020
CHARGED TO COST=108689
L64 1051 DUP REM L6 L11 L17 L22 L27 L32 L38 L44 L50 L56 L61 (1280 DUPLIC
ANSWERS '1-198' FROM FILE MEDLINE
ANSWERS '199-245' FROM FILE AGRICOLA
ANSWERS '246-306' FROM FILE BIOSIS
ANSWERS '307-314' FROM FILE CABA
ANSWERS '315-340' FROM FILE PQSCITECH
ANSWERS '341-476' FROM FILE TOXCENTER
ANSWERS '477-722' FROM FILE EMBASE
ANSWERS '723-726' FROM FILE ESBIODBASE
ANSWERS '727-1011' FROM FILE HCAPLUS
ANSWERS '1012-1051' FROM FILE SCISEARCH
SAVE L64 MET4SUB/A

L65 759 SEA SPE=ON ABB=ON PLU=ON L64 AND TOX/Q
SAVE L65 MET4TOX/A
L66 627 SEA SPE=ON ABB=ON PLU=ON L64 AND RES/Q
SAVE L66 MET4RES/A
L67 752 SEA SPE=ON ABB=ON PLU=ON L64 AND FATE/Q
SAVE L67 MET4FATE/A
L68 806 SEA SPE=ON ABB=ON PLU=ON L64 AND ECO/Q
SAVE L68 MET4ECO/A

L69 1018 SEA SPE=ON ABB=ON PLU=ON L65 OR L66 OR L67 OR L68
SAVE L69 MET4FINAL/A

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 11:45:12 ON 27 FEB 2020

' Database Registry (for identification of substance search terms):

FILE 'REGISTRY' ENTERED AT 15:31:27 ON 04 MAY 2020

CHARGED TO COST=108689

L1 1 SEA SPE=ON ABB=ON PLU=ON 24569-83-3
D IDE

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 15:33:34 ON 04 MAY 2020

Appendix 9: ORIGINAL SEARCH QUERY - Part 6

FILE 'MEDLINE' ENTERED AT 17:25:56 ON 04 MAY 2020
CHARGED TO COST=108689

L1 QUE SPE=ON ABB=ON PLU=ON 24569-83-3 OR 2 METHYL PHOSPHONOMET
HYL AMINO ACETIC ACID OR 2 METHYL PHOSPHONOMETHYL AMINOACETIC
ACID OR ACETIC ACID 2 N METHYL N PHOSPHONATOMETHYL AMINO OR
GLYCINE N METHYL N PHOSPHONOMETHYL OR GLYPHOSATE N METHYL OR
METHYL GLYPHOSATE
L2 QUE SPE=ON ABB=ON PLU=ON METHYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR METHYL PHOSPHONOMETHYL AMINOACETIC ACID OR N
METHYL N PHOSPHONOMETHYL GLYCINE OR N METHYLGLYPHOSATE OR N
PHOSPHONOMETHYL N METHYL GLYCINE OR N PHOSPHONOMETHYL N
METHYLGLYCINE
L3 QUE SPE=ON ABB=ON PLU=ON L1 OR L2
SAVE TEMP L3 GLYNMG/Q
L4 10 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L5 7 SEA SPE=ON ABB=ON PLU=ON L4 AND 2010-2020/PY
L6 7 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L6 NMGMEDL/A

FILE 'AGRICOLA' ENTERED AT 17:30:51 ON 04 MAY 2020
CHARGED TO COST=108689

L7 7 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L8 6 SEA SPE=ON ABB=ON PLU=ON L7 AND 2010-2020/PY
L9 6 SEA SPE=ON ABB=ON PLU=ON L8 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L9 NMGAGRI/A

FILE 'BIOSIS' ENTERED AT 17:32:38 ON 04 MAY 2020
CHARGED TO COST=108689

L10 22 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L11 7 SEA SPE=ON ABB=ON PLU=ON L10 AND 2010-2020/PY
L12 6 SEA SPE=ON ABB=ON PLU=ON L11 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L12 NMGBIOS/A

FILE 'CABA' ENTERED AT 17:36:02 ON 04 MAY 2020
CHARGED TO COST=108689

L13 41 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L14 16 SEA SPE=ON ABB=ON PLU=ON L13 AND 2010-2020/PY
L15 16 SEA SPE=ON ABB=ON PLU=ON L14 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L15 NMGCABA/A

FILE 'FSTA' ENTERED AT 17:37:34 ON 04 MAY 2020
CHARGED TO COST=108689

L16 2 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L17 2 SEA SPE=ON ABB=ON PLU=ON L16 AND 2010-2020/PY
L18 2 SEA SPE=ON ABB=ON PLU=ON L17 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L18 NMGFSTA/A

FILE 'PQSCITECH' ENTERED AT 17:38:33 ON 04 MAY 2020
CHARGED TO COST=108689

L19 12 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L20 6 SEA SPE=ON ABB=ON PLU=ON L19 AND 2010-2020/PY
L21 6 SEA SPE=ON ABB=ON PLU=ON L20 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L21 NMGPQSCI/A

FILE 'TOXCENTER' ENTERED AT 17:41:26 ON 04 MAY 2020
CHARGED TO COST=108689

L22 39 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L23 27 SEA SPE=ON ABB=ON PLU=ON L22 AND 2010-2020/PY
L24 19 SEA SPE=ON ABB=ON PLU=ON L23 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L24 NMGTOXC/A

FILE 'EMBASE' ENTERED AT 17:44:29 ON 04 MAY 2020
CHARGED TO COST=108689

L25 10 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L26 7 SEA SPE=ON ABB=ON PLU=ON L25 AND 2010-2020/PY
L27 7 SEA SPE=ON ABB=ON PLU=ON L26 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L27 NMGEMBA/A

FILE 'ESBIODBASE' ENTERED AT 17:45:52 ON 04 MAY 2020
CHARGED TO COST=108689

L28 12 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L29 8 SEA SPE=ON ABB=ON PLU=ON L28 AND 2010-2020/PY
L30 8 SEA SPE=ON ABB=ON PLU=ON L29 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L30 NMGESBIO/A

FILE 'HCAPLUS' ENTERED AT 17:47:33 ON 04 MAY 2020
CHARGED TO COST=108689

L31 120 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L32 57 SEA SPE=ON ABB=ON PLU=ON L31 AND 2010-2020/PY
L33 27 SEA SPE=ON ABB=ON PLU=ON L32 NOT (COMMENT? OR DISSERTATION

OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L33 NMGHCAP/A

FILE 'SCISEARCH' ENTERED AT 17:50:06 ON 04 MAY 2020
CHARGED TO COST=108689

L34 28 SEA SPE=ON ABB=ON PLU=ON L1 OR L2
L35 12 SEA SPE=ON ABB=ON PLU=ON L34 AND 2010-2020/PY
L36 12 SEA SPE=ON ABB=ON PLU=ON L35 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L36 NMGSCIS/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 17:53:27 ON 04 MAY 2020
CHARGED TO COST=108689

L37 46 DUP REM L6 L9 L12 L15 L18 L21 L24 L27 L30 L33 L36 (70 DUPLICATE
ANSWERS '1-7' FROM FILE MEDLINE
ANSWERS '8-11' FROM FILE AGRICOLA
ANSWER '12' FROM FILE BIOSIS
ANSWERS '13-22' FROM FILE CABA
ANSWER '23' FROM FILE PQSCITECH
ANSWERS '24-30' FROM FILE TOXCENTER
ANSWERS '31-32' FROM FILE ESBIOBASE
ANSWERS '33-46' FROM FILE HCAPLUS
SAVE L37 GLYNMGSUBST/A
D COST FUL
D ALL 1-32
D 33-46

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 20:54:50 ON 04 MAY 2020

Literature Review Report

**Scientific peer-reviewed open literature covering the
publication period of January 2020 to June 2020 for the
approval of pesticide active substance glyphosate and
metabolites**

**as under Article 8(5) of Regulation (EC) No 1107/2009
(Ref. EFSA Journal 2011; 9(2) 2092)**

Report number

113898-CA9-1

Author

Anonymous, 2020

Sponsor

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(on behalf of the Glyphosate Renewal Group, AIR5)
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Reporting Date

20-October-2020

Date of search(es):

02-July-2020

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The information contained herein has been obtained from sources believed to be the most reliable. Every effort has been made to ensure completeness of data. However, no database search can be completely comprehensive, and it is possible that relevant documents have been omitted.

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1 Summary

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”², and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG)⁵ on how to present the literature search in the dossier has been followed. Please refer to **Appendix 1** (page 63) for more details.

This Literature Review Report summarizes the search and evaluation of glyphosate public literature, covering the publication period of January 2020 to June 2020, as requested by the AGG in their letter dated 10-July-2020, subject “Glyphosate: Check of completeness of the supplementary dossier for renewal of approval under Commission Implementing Regulation (EU) No 844/2012”, section 2: Elements to be submitted in accordance with Article 11(5) of Regulation (EU) No 844/2012, point 23.

The literature search was conducted accessing 11 bibliographic databases via the service provider STN.

852 articles in total were identified upon removal of duplicates within the current search (January 2020 – June 2020) and articles found already in the previous search (January 2010 – December 2019⁶).

All 852 articles were subsequently assessed for their relevance at title/abstract level (“rapid assessment” according to the procedure and requirements stated in the EFSA 2092 Guidance Document).

A total of 774 of the 852 articles were identified as “non-relevant” in the rapid assessment (e.g. publications dealing with chemical synthesis, efficacy, analytical methods or publications which are not related to glyphosate or its metabolites) and excluded from further evaluation. Due to the large quantity of data, and as agreed with the AGG, the list of articles and the justification for their non-relevance is provided in a standalone Literature Review Excel File⁷ (Document ID: 113898_CA9-1_Literature Review Excel File).

For the remaining 78 articles, identified as potentially “relevant” or of “unclear relevance” in the rapid assessment, the full-text documents⁸ were reviewed in detail (“detailed assessment”).

¹ (aminomethyl)phosphonic acid (AMPA), N-acetyl-AMPA, N-acetyl-glyphosate, (hydroxymethyl)phosphonic acid (HMPA), N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA, methylphosphonic acid and N-methylglyphosate.

² European Food Safety Authority, 2011: *Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) No 1107/2009*. EFSA Journal 2011;9(2):2092. 49 pp, doi:10.2903/j.efsa.2011.2092.

³ Appendix to EFSA Journal 2011;9(2):2092. *Further guidance on performing and presenting the literature search*. Available online: <https://efsa.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.2903/j.efsa.2011.2092&file=efs22092-sup-0001-Appendix.pdf>

⁴ European Food Safety Authority, 2019. *Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*. EFSA supporting publication 2019:EN-1612. 49 pp., doi:10.2903/sp.efsa.2019.EN-1612.

⁵ On 10th May 2019, the European Commission appointed four Member States (France, Hungary, the Netherlands and Sweden) to act jointly as ‘rapporteurs’ for the AIR5 process assessment of glyphosate. This group of Member States is known as the Assessment Group on Glyphosate (AGG).

⁶ See Literature Review Report 108689-CA9-1 for more details (submitted to the AGG in June 2020).

⁷ Please note that the standalone Literature Review Excel File will be submitted on a separate CD-ROM / DVD.

⁸ All articles used within the glyphosate dossier have been purchased via Copyright Clearance Centre. In some cases, please note that the Copyright Clearance is not overtly visible, and in some instances is part of the article documents. Should the Copyright Clearance proof be required, this can be provided upon request.

A total of 35 articles of the remaining 78 articles were identified as “non-relevant” in the detailed assessment and were excluded from further evaluation. The list of the articles and the justification for their non-relevance is provided in **Table 38** of this Literature Review Report document.

The remaining 43 articles identified as “relevant” in the detailed assessment were classified according to the EFSA 2092 Guidance Document (EFSA Journal 2011;9(2):2092, Point 5.4.1).

Category A Articles which provide data for establishing or refining risk assessment parameters. For all articles of Category A, a reliability assessment was performed as recommended in the EFSA 2092 Guidance Document (GD). Summaries were compiled for Category A articles classified as “reliable” or “reliable with restrictions”. The list of these Category A & reliable / reliable with restrictions articles can be found in **Table 32** and **Table 33** of this Literature Review Report document.

Category B Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment. A justification for such decision is provided as recommended in the EFSA 2092 Guidance Document (GD). The list of these Category B articles and the justifications can be found in **Table 34** and **Table 35** of this Literature Review Report document.

Category C Articles for which relevance cannot be clearly determined. As recommended in the EFSA 2092 Guidance Document (GD), an explanation is provided why the relevance could not be determined. The list of these Category C articles and the explanations can be found in **Table 36** and **Table 37** of this Literature Review Report document.

The full outcome of the literature evaluation is provided in **Table 1**.

Table 1: Summary of the literature review

Section	Number of articles found	Rapid assessment (title/abstract level)		Detailed assessment (full-text level)	
		non-relevant articles	potentially relevant / unclear relevance	non-relevant articles	relevant articles (Category A+B+C)
Efficacy / Agronomy ^{a)}	360	360	n.a.	n.a.	n.a.
Analytical methods ^{a)}	72	72	n.a.	n.a.	n.a.
Other non-relevant categories ^{b)}	73	73	n.a.	n.a.	n.a.
Ecotoxicology	150	121	29	14	15
E-fate	85	83	2	0	2
Residues	16	15	1	0	1
Toxicology	96	50	46	21	25
Total	852	774	78	35	43

^{a)} Efficacy / Agronomy (e.g. reporting desired effects on organisms to be controlled) and development of analytical methods (artificial measurements) do not provide information useful/required for the environmental or human safety risk assessment.

^{b)} The category "other non-relevant categories" covers a wide range of scientific publications which are not related to glyphosate or its metabolites or are not related to exposure of humans or the environment to glyphosate or its metabolites and thus not relevant for the risk assessments.

The full outcome of the relevant articles after detailed (full-text) assessment is provided in **Table 2**.

Table 2: Relevant articles by full-text classified according to the EFSA 2092 GD, Point 5.4.1

Section	Relevant articles by full-text (EFSA 2092 GD, Point 5.4.1)		
	Category A ^{a)}	Category B ^{b)}	Category C ^{c)}
Ecotoxicology	2	13	0
E-fate	2	0	0
Residues	1	0	0
Toxicology	7	18	0
Total	12	31	0

^{a)} Category A: Articles, which provide data for establishing or refining risk assessment parameters.

^{b)} Category B: Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment.

^{c)} Category C: Articles for which relevance cannot be clearly determined.

All articles (and their translations) evaluated at full text level (detailed assessment) were submitted to the AGG in a Portable Document Format (PDF).

Please refer to **Appendix 2** (page 64) to see the article selection process in detail.

2 Introduction

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”², and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA Supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG) on how to present the literature search in the dossier has been followed. Please refer to **Appendix 1** (page 63) for more details.

In June 2020, a Literature Review Report (Document ID: 108689-CA9-1), summarizing results of the search and evaluation of the glyphosate scientific peer-reviewed open literature published from January 2010 until end of December 2019 was submitted to the AGG as part of the Glyphosate AIR5 dossier. In July 2020 during the dossier completeness check, the AGG requested a top-up search and evaluation for Glyphosate open literature covering the publication period between December 2019 and June 2020.

This present Literature Review Report 113898-CA9-1 summarizes the top-up search and evaluation of glyphosate public literature, covering the publication period of January 2020 to June 2020. The month of December 2019 was already comprehensively covered by the previously submitted Literature Review Report (108689-CA9-1).

The search has been conducted via the online service provider STN (www.stn-international.de) that provides access to a broad range of databases and to published research, journal literature, patents, structures, sequences, properties, and other data.

To offer a comprehensive literature search covering the requirements of the EFSA 2092 Guidance Document eleven databases have been used: AGRICOLA, BIOSIS, CABA, CAPLUS, EMBASE, ESBIOBASE, MEDLINE, TOXCENTER, FSTA, PQSCITECH, and SCISEARCH.

Please refer to **Table 3** for more details on the literature search.

Table 3: Overview of the search conducted for glyphosate and its metabolites

Performed for	Covering publication period	Conducted on
Glyphosate AMPA N-acetyl-AMPA N-acetyl-glyphosate HMPA N-methyl-AMPA N-glyceryl-AMPA N-malonyl-AMPA methylphosphonic acid N-methylglyphosate	January 2020 – June 2020 (incl. June 2020)	02-July 2020

AMPA = (aminomethyl)phosphonic acid

HMPA = (hydroxymethyl)phosphonic acid

A “focused search for grouped data requirements”⁹ have been performed (a combination of a substance basic input parameters, keywords and “search filters” defined for the four technical sections –toxicology, residues, environmental fate, and ecotoxicology).

Please refer to **Chapter 2.2** and **2.3** (pages 14 and 16) for the input parameters, keywords and search filters used in the literature search.

Regarding details on the bibliographic databases used in the literature search, please refer to **Chapter 2.1 (Table 4)**.

Regarding the number of articles retrieved in the literature search, please refer to **Chapter 2.1 (Table 5)**.

For the relevance and reliability assessment, please refer to **Chapter 2.4** and **2.5** (pages 19 and 22).

For the full outcome of the literature search for the individual technical sections, please refer to **Chapter 3** (page 27).

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⁹ Citation from the EFSA 2092 Guidance Document: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

2.1 Bibliographic databases used in the literature search

Table 4: Overview of the databases used in the literature search

Data requirement(s) captured in the search	Details of the search(es)			
	1. AGRICOLA	2. BIOSIS	3. CABA	4. CAPLUS
Justification for choosing the source:	Provides literature from agriculture and related fields, e.g. biology, biotechnology, botany, ecology etc.	Provides the most comprehensive and largest life science literature, e.g. biosciences, biomedicine etc.	Provides literature from agriculture and related sciences, e.g. biotechnology, forestry, veterinary medicine etc.	Provides literature from chemistry and related fields, e.g. biochemistry, chemical engineering etc.
Number of records in the database at the time of search:	> 6.7 million (09/2019)	> 27.8 million (04/2019)	> 8.9 million (05/2018)	> 50.7 million (08/2019)
Database update:	Monthly	Weekly	Weekly	Daily updates bibliographic data; weekly updates indexing data
Date of the search:	02-July-2020	02-July-2020	02-July-2020	02-July-2020
Database covers records:	1970-present	1926-present	1973-present	1907-present and more than 180,000 pre-1907
Date of the latest database update:	10-June-2020	01-July-2020	01-July-2020	01-July-2020
Language limit:	No	No	No	No
Document types <u>excluded</u> that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	258	321	467	364

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)		
	5. MEDLINE	6. EMBASE	7. TOXCENTER
Justification for choosing the source:	Provides literature from every area of medicine.	Provides literature from biomedical and pharmaceutical fields, e.g. bioscience, biochemistry, human medicine, forensic science, paediatrics, pharmacy, pharmacology, drug therapy, psychiatry, public health, biomedical engineering, environmental science.	Provides literature on pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals.
Number of records in the database at the time of search:	> 30 million (08/2019)	> 36.4 million (08/2019)	> 14.4 million (08/2019)
Database update:	Six times each week, with an annual reload	Daily	Weekly
Date of the search:	02-July-2020	02-July-2020	02-July-2020
Database covers records:	1946-present	1974-present	1907-present
Date of the latest database update:	01-July-2020	01-July-2020	30-June-2020
Language limit:	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .		
Total number of records retrieved:	207	166	470

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)			
	8. FSTA	9. PQSCITECH	10. ESBIODBASE	11. SCISEARCH
Justification for choosing the source:	Provides literature on scientific and technological aspects of the processing and manufacture of human food products, e.g. biotechnology, hygiene and toxicology, engineering etc.	Provides a valuable and huge resource of literature (merge of 25 STN databases) from all science areas and technology; from engineering to lifescience.	Provides comprehensive literature on entire spectrum of biological and biosciences research, e.g. microbiology, biotechnology, ecological & environmental sciences, genetics, plant and crop science, toxicology and many more.	Provides one of the largest multidisciplinary scientific literature covering a broad field of sciences, technology, and biomedicine.
Number of records in the database at the time of search:	> 1.4 million (07/2018)	> 32 million (07/2017)	> 7.6 million (07/2018)	> 47.7 million (08/2019)
Database update:	Weekly	Monthly	Weekly	Weekly
Date of the search:	02-July-2020	02-July-2020	02-July-2020	02-July-2020
Database covers records:	1969-present	1962-present	1994-present	1974-present
Date of the latest database update:	25-June-2020	26-June-2020	01-July-2020	29-June-2020
Language limit:	No	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	20	106	206	571

Table 5: Total number of articles retrieved

Scope of the search	After automatic removal of duplicates within the databases in the current search (Jan 2020 – Jun 2020)	After applying search filters ^{a)} within the current search (Jan 2020 – Jun 2020)	After manual removal of duplicates ^{b)} within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019) ^{c)}
January 2020 – June 2020 Glyphosate AMPA N-acetyl-AMPA N-acetyl-glyphosate HMPA N-methyl-AMPA N-glyceryl-AMPA N-malonyl-AMPA methylphosphonic acid N-methylglyphosate	1648	1638	852

^{a)} Search filters applied for the four technical sections (residues, environmental fate, toxicology and ecotoxicology). Please refer to **Chapter 2.3** for more details (page 16).

^{b)} Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{c)} Please refer to the Literature Review Report 108689-CA9-1 submitted to the AGG in June 2020.

2.2 Input parameters used in the literature search

The basic input parameters used in the literature search, e.g. IUPAC, chemical name or CAS number, are provided in **Table 6 - Table 15**.

Table 6: Input parameters – active substance Glyphosate

Substance name	Glyphosate Salts: isopropylamine, potassium, ammonium, methylmethanamine
IUPAC / CA name	2-(phosphonomethylamino)acetic acid
CAS number(s)	1071-83-6 Salts: 38641-94-0, 70901-12-1, 39600-42-5, 69200-57-3, 34494-04-7, 114370-14-8, 40465-66-5, 69254-40-6

Table 7: Input parameters – metabolite AMPA

Substance name	AMPA
IUPAC / CA name	(aminomethyl)phosphonic acid
CAS number(s)	1066-51-9

Table 8: Input parameters – metabolite N-acetyl glyphosate

Substance name	N-acetyl glyphosate
IUPAC / CA name	N-acetyl-N-(phosphonomethyl)glycine
CAS number(s)	129660-96-4

Table 9: Input parameters – metabolite N-acetyl AMPA

Substance name	N-acetyl AMPA
IUPAC / CA name	[(acetylamino)methyl]phosphonic acid
CAS number(s)	57637-97-5

Table 10: Input parameters – metabolite HMPA

Substance name	HMPA
IUPAC / CA name	(hydroxymethyl)phosphonic acid
CAS number(s)	2617-47-2

Table 11: Input parameters – metabolite N-methyl AMPA

Substance name	N-methyl AMPA
IUPAC / CA name	[(methylamino)methyl]phosphonic acid
CAS number(s)	35404-71-8

Table 12: Input parameters – metabolite N-glyceryl AMPA

Substance name	N-glyceryl AMPA
IUPAC / CA name	(2,3-dihydroxypropanoylamino)methylphosphonic acid
CAS number(s)	No data

Table 13: Input parameters – metabolite N-malonyl AMPA

Substance name	N-malonyl AMPA
IUPAC / CA name	3-oxo-3-(phosphonomethylamino)propanoic acid
CAS number(s)	no data

Table 14: Input parameters – metabolite methylphosphonic acid

Substance name	methylphosphonic acid
IUPAC / CA name	methylphosphonic acid
CAS number(s)	993-13-5

Table 15: Input parameters – metabolite N-methylglyphosate

Substance name	N-methylglyphosate
IUPAC / CA name	2-[methyl(phosphonomethyl)amino]acetic acid
CAS number(s)	24569-83-3

2.3 Keywords and search filters used in the literature search

The approach used for the search was the “focused search for grouped data requirements”¹⁰, which combines the active substance and metabolite basic input parameters, keywords and search filters defined for each technical section. Please refer to **Table 16** for more details on the keywords used and to **Table 17 - Table 20** for the search filters.

Table 16: Keywords used for the active substance glyphosate and its metabolites

Gly1: Glyphosate and AMPA	glyphosat? OR glifosat? OR glyfosat? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR aminomethyl phosphonic OR aminomethylphosphonic OR 1066-51-9
Gly2: N-acetyl glyphosate and N-acetyl AMPA	2 acetyl phosphonomethyl amino acetic acid OR n acetyl glyphosate OR n acetyl glyphosate OR n acetyl n phosphonomethyl glycine OR 129660-96-4 OR n acetyl ampa OR acetyl amino methyl phosphonic acid OR acetylaminomethyl phosphonic acid OR 57637-97-5
Gly 3: HMPA	2617-47-2 OR hydroxymethanephosphonic acid OR hydroxymethyl phosphonate OR hydroxymethylphosphonate OR hydroxymethyl phosphonic acid OR hydroxymethylphosphonic acid OR methanhydroxyphosphonic acid OR phosphonic acid(1w)hydroxymethyl OR phosphonomethanol
Gly 4: N-methyl AMPA	35404-71-8 OR methylamino methyl phosphonic acid OR methylaminomethyl phosphonic acid OR methylaminomethylphosphonic acid OR n methyl ampa OR nsc 244826 OR phosphonic acid methylamino methyl OR phosphonic acid p methylamino methyl
Gly 4: N-glyceryl AMPA	2 3 dihydroxy 1 oxopropyl aminomethyl phosphonic acid OR 2 3 dihydroxy 1 oxopropyl aminomethylphosphonic acid OR n glyceryl ampa
Gly 4: N-malonyl AMPA	3 oxo 3 phosphonomethyl amino propanoic acid OR 3 oxo 3 phosphonomethyl aminopropanoic acid OR n malonyl ampa
Gly 4: methylphosphonic acid	993-13-5 OR dihydrogen methylphosphonate OR methanephosphonic acid OR methyl phosphonic acid OR methylphosphonic acid OR nsc 119358 OR phosphonic acid methyl OR phosphonic acid p methyl
Gly 5: N-methylglyphosate (NMG)	24569-83-3 OR 2 methyl phosphonomethyl amino acetic acid OR 2 methyl phosphonomethyl aminoacetic acid OR acetic acid 2 n methyl n phosphonatomethyl amino OR glycine n methyl n phosphonomethyl OR glyphosate n methyl OR methyl glyphosate OR methyl phosphonomethyl amino acetic acid OR methyl phosphonomethyl aminoacetic acid OR n methyl n phosphonomethyl glycine OR n methylglyphosate OR n phosphonomethyl n methyl glycine OR n phosphonomethyl n methylglycine

(1w) = proximity operator (this order, up to 1 word between)

AND / OR / NOT = boolean search operators

? = any character(s)

¹⁰ Citation from the EFSA 2092 GD: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

Table 17: Search filters related to the technical section toxicology

Toxicology
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
tox? OR hazard? OR adverse OR health OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR in vivo OR in vitro OR invivo OR invitro OR mode of action OR skin? OR eye? OR irrit? OR sensi? OR allerg? OR rat OR rats OR dog? OR rabbit? OR guinea pig? OR mouse OR mice OR metabolism OR metabolite? OR metabolic OR distribution OR adsorption OR excretion OR elimination OR kinetic OR cytochrome OR enzym? OR gen? OR muta? OR chromos? OR clastogen? OR DNA OR carcino? OR cancer? OR tumor? OR tumour? OR oncog? OR oncol? OR malign? OR immun? OR neur? OR endocrin? OR hormon? OR gonad? OR disrupt? OR reproduct? OR development? OR malform? OR anomal? OR fertil? OR foet? OR fet? OR matern? OR pregnan? OR embryo? OR epidem? OR medical? OR poison? OR exposure OR operator? OR bystander? OR resident? OR worker? OR occupat? biomonitoring OR human exposure OR microbiome OR oxidative stress OR apoptosis OR necrosis OR cytotoxicity OR Polyoxyethyleneamine OR POEA OR surfactant OR risk assessment?

Table 18: Search filters related to the technical section residues

Residues
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
uptake OR translocation OR rumen OR storage stability OR storage OR stability OR metabolic OR metabolism OR breakdown OR nature of residues OR residue? OR magnitude of residues OR process? OR effects of processing OR dessicant OR preharvest OR preemerg? OR ?resistant? OR ?toleran? OR transgenic OR hydroly? OR rotation? OR succeed? OR plant? OR crop? OR feed? OR animal? OR livestock? OR hen OR cattle OR ruminant? OR goat? OR cow? OR pig? OR dietary OR assessment OR risk assessment OR consum? OR exposure

Table 19: Search filters related to the technical section environmental fate

Environmental fate
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
soil OR water OR sediment OR degradat? OR photo? OR soil residues OR soil accumulat? OR soil contaminat? OR mobility OR sorption OR column leaching OR aged residue OR leach? OR lysimeter OR groundwater OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR transport OR micronutrient OR phosphate OR iron OR manganese OR half-life OR halflife OR half-lives OR halflives OR DT50 OR kinetics OR off-site movement OR removal OR drinking water OR water treatment processes OR atmospheric deposition OR tile-drains OR surface water OR monitoring data OR disinfectant OR ozone OR tillage OR infiltration OR hard surface OR rainwater OR rain water OR chelat? OR complex? OR mineralization OR persistence OR ligand

Table 20: Search filters related to the technical section ecotoxicology

Ecotoxicology
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR plant AND submerge? OR emerge? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator OR solitary OR alg? OR aquatic OR freshwater OR vertebrat? OR mammal? OR rat OR mouse OR mice OR rabbit OR hare OR protection OR model? OR vole OR pest OR arthropod? OR beneficials OR typhlodromus OR aphidius OR parasitoid OR predator OR chrysoperla OR Orius OR spider OR worm? OR ?worm OR Eisenia OR soil OR collembol? OR macro organism OR folsomia OR springtail OR decompos? OR micro organisms OR microorganisms OR microbial OR carbon OR nitrogen OR plant? OR vegetative vigo? OR seedling OR germination OR monocot? OR dicot? OR sewage OR activated sludge OR biodegrad? OR bioaccumulation? OR amphib? OR reptile? OR aquatic plant OR beneficial

2.4 Relevance assessment

After removal of duplicates, the remaining articles were assessed for their relevance. First, at “title / abstract level” (so-called “rapid assessment”) and second, at “full-text level” (so called “detailed assessment”).

Articles that were identified as “non-relevant” in the rapid assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For articles that were not excluded in the rapid assessment (potentially relevant articles and articles of an unclear relevance), a detailed relevance assessment of a full-text document was performed.

Articles that were identified as “non-relevant” in the detailed assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For both assessments (rapid and detailed) the same criteria for non-relevance were applied (see **Chapter 2.4.1** and **2.4.2**).

2.4.1 Criteria applied for “non-relevance”

Articles identified as “non-relevant” in the rapid and detailed assessments belong to one of the following categories and were excluded from further evaluation. A justification for their non-relevance was provided.

- Publications related to efficacy (resistance related articles, new uses of control of pest / crops) or to agricultural / biological research (crop science, breeding, fertilization, tillage, fundamental plant physiology / micro- / molecular biology).
- Publications dealing with analytical methods / development.
- Publications describing new methods of synthesis (discovery / developments) or other aspects of basic (organic / inorganic) chemistry.
- Patents.
- Wastewater treatment.
- Abstracts referring to a conference contribution that does not contain sufficient data / information for regulatory risk assessment.
- Publications focusing on genetically modified organisms / transgenic crops; no data directly relevant to glyphosate evaluation (e.g. crop compositional analysis, gene flow, protein characterization).
- Publications where glyphosate or a relevant metabolite were not the focus of the publication.
- Secondary information including scientific and regulatory reviews¹¹.
- Articles dealing with political / socio / economic analysis.
- Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity).
- Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes.
- Findings not related to ecotoxicology, toxicology, residues, and environmental fate.
- Publications not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.).

¹¹ Reviews have been partly evaluated on full text level as well – case by case decision.

- Publications dealing with a Roundup¹² formulation / other glyphosate formulations that is not the representative formulation for the AIR5 dossier and thus not relevant to the EU glyphosate renewal.
- Publications dealing with general pesticide exposures (not glyphosate specific).
- Publications generating endpoints that are not relatable to the EU level regulatory risk assessment (e.g. findings based on enzyme, cellular and molecular level etc.).
- Opinion articles where no new data is provided that can be used for the EU regulatory risk assessment.

2.4.2 Additional criteria for articles on the health and exposure of glyphosate

The scientific literature on the health effects of glyphosate can be subdivided in two main parts:

- Articles containing data on glyphosate acid and salts and on the reference glyphosate formulation MON 52276, and
- Articles only containing data on glyphosate formulations and/or co-formulants that have a composition different from that of the reference formulation MON 52276.

In the case of articles only relating to glyphosate formulations *in vitro* testing with the exception of cell/tissue systems¹³ that are likely to come in direct contact with formulations and glyphosate formulations containing other active ingredients are excluded. The reason for the exclusion of *in vitro* testing of formulations to assess health effects as a result of systemic exposure is the presence of surfactants which produce cell toxicity based on the destabilization of the cell membrane and the mitochondrial membrane thus masking the specific toxicity of glyphosate. The toxicity of the co-formulants in combination with glyphosate is dependent on the concentration and the nature of the co-formulants and can be addressed on a case-by-case basis during the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

In the relevance of glyphosate data, those articles have been considered as not relevant (and reliable) for the assessment for systemic toxicity when only *in vitro* results are presented with glyphosate concentrations above 1 mM. This is because it is physiologically not possible to attain such concentrations in standard regulatory *in vivo* testing due to the limited oral bioavailability (approx. 20%), very low dermal absorption, and rapid systemic elimination of glyphosate in *in vivo* test systems. It thus makes no sense to include such data in the risk assessment of glyphosate. Exceptions can be made in the event of direct contact with formulations resulting in localized effects, but then there is the contribution of the toxicity of the co-formulants which can be better addressed in the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

¹² Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contains a surfactant polyethoxylated tallow amine (also polyoxyethyleneamine, POEA) which is not permitted for use in the EU. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in articles dealing with POEA based Roundup formulations cannot be related to the representative formulation MON 52276 which is quaternary-ammonium based (and not POEA based).

¹³ Glyphosate-based herbicides (GBH) contain surfactants that destabilize the cell membrane and the mitochondrial membrane and thus produce a toxicity that is not representative for glyphosate (see Levine S. L. et al, *Cell Biol. Toxicol.* (2007) 23:385-400). This has been clearly demonstrated in the scientific literature and also in some papers reviewed for this submission where *in vitro* glyphosate toxicity is compared against that of GBH and surfactants.

The limit of 1 mM has been based on the single dose oral pharmacokinetic data of a formulation containing 71.7% w/w glyphosate where an oral dose of 1,430 mg/kg bw in the rat gives plasma levels of 38.1 µg/mL or 0.225 mM after 2 hours. When extrapolated linearly (which is possible for glyphosate because it is not subject to hepatic metabolism) this gives plasma levels of 53.3 µg/mL or 0.315 mM at 2 hours after oral intake of 2,000 mg/kg bw and 107 µg/mL or 0.630 mM at 2 hours after oral intake of 4,000 mg/kg bw. A systemic concentration of glyphosate of 1 mM would then represent an oral dose of more than 6,000 mg/kg bw which is completely unreasonable for repeat dose experimental *in vivo* testing under today's OECD test guidelines. The ADI for glyphosate of 0.5 mg/kg bw/day corresponds with a daily systemic concentration of 0.17 µg/mL or 1 µM when a 60 kg person with 36 L extracellular fluid is considered with a glyphosate oral bioavailability of 20%. The daily systemic dose of glyphosate on the day of application (i.e. highest exposure day), based on the geometric mean of 3.2 µg/L in urine, of glyphosate applicators in the US is approx. 0.0001 mg/kg bw/day (Acquavella, 2004¹⁴) which is 1000 times less than the systemic dose (0.1 mg/kg bw) corresponding with the ADI oral dose of 0.5 mg/kg bw with 20% oral bioavailability.

Many articles that have been considered relevant for the risk assessment of glyphosate and have been assessed for reliability on full text basis, contain experimental data as well on glyphosate as such as on formulations (different from MON 52276) and co-formulants. In such cases, only the toxicology data pertinent to glyphosate and to the reference formulation (if that can be clearly stated by the author of the article) are summarized and discussed. In the case of articles on exposure monitoring and epidemiology, exposure to glyphosate formulations are considered.

2.4.3 Categorization of “relevant” articles at full-text level

Articles that were not excluded in the detailed assessment (see **Chapter 2.4.1** and **2.4.2**) were categorized as recommended in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092, Point 5.4.1.

Category A *Studies that provide data for establishing or refining risk assessment parameters. These studies should be summarised in detail following the subsequent steps of the OECD Guidance documents (OECD, 2005; 2006) and should be considered for reliability.*

Category B *Studies that are relevant to the data requirement, but in the opinion of the applicant provide only supplementary information that does not alter existing risk assessment parameters. A justification for such a decision should be provided.*

Category C *Studies for which relevance cannot be clearly determined. For each of these studies the applicants should provide an explanation of why the relevance of such studies could not be definitively determined.*

The list of Category A articles can be found in **Table 32** and **Table 33**. The list of Category B articles and the justifications can be found in **Table 34** and **Table 35**. The list of Category C articles and the explanations can be found in **Table 36** and **Table 37**.

All articles (and their translations) evaluated at full text level (detailed assessment) were submitted to the AGG in a Portable Document Format (PDF).

¹⁴ Acquavella J. F. *et al.* (2004), Environmental Health Perspectives, 112(3), 321-326.

2.5 Reliability assessment

For articles, which were identified, in the detailed assessment, as relevant articles of Category A (see **Chapter 2.4.3**) a reliability assessment was performed. The reliability criteria for each technical section are summarized in **Table 21 - Table 23**.

For relevant articles of Category A that were classified either as reliable or reliable with restrictions, summaries were compiled.

Articles of Category A which were classified as non-reliable were downgraded to articles of Category B and justification for such a decision was provided.

Table 21: Reliability criteria for ecotoxicology, environmental fate and residues

Applied for	Reliability criteria
Ecotoxicology, Environmental Fate, Residues	For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines are met.
Ecotoxicology, Environmental Fate, Residues	(No) previous exposure to other chemicals is documented (where relevant).
Ecotoxicology	For aquatic studies, the test substance is dissolved in water or where a carrier is required, it is appropriate (non-toxic) and a carrier control / positive control is considered in the test design.
Environmental Fate, Residues	The test substance is dissolved in water or non-toxic solvent.
Ecotoxicology, Environmental Fate, Residues	Test item is sufficiently documented, and reported (i.e. purity, source, content, storage conditions).
Ecotoxicology	For tests including vertebrates, compliance of the batches used in toxicity studies compared to the technical specification.
Ecotoxicology	Species used in the experiment are clearly reported, including source, experimental conditions (where relevant): strain, adequate age/life stage, body weight, acclimatization, temperature, pH, oxygen (dissolved oxygen for aquatic tests) content, housing, light conditions, humidity (terrestrial species) incubation conditions, feeding.
Ecotoxicology	The validity criteria from relevant test guidelines can be extrapolated across different species but not necessarily across different test designs. If different, then the nature of the difference and impact should ideally be discussed.
Ecotoxicology, Environmental Fate, Residues	Only glyphosate or its metabolites is the test substance (excluding mixture), and information on application of the test substance is described.
Ecotoxicology, Environmental Fate, Residues	The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite).
Ecotoxicology, Environmental Fate, Residues	Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
Ecotoxicology, Environmental Fate, Residues	Analytical verifications performed in test media (concentration) / collected samples, stability of the test substance in test medium should be documented.

Applied for	Reliability criteria
Ecotoxicology	The test has been performed in several dose levels (at least 3) including a positive / negative control where relevant.
Ecotoxicology	Suitable exposure throughout the whole exposure period was demonstrated and reported.
Ecotoxicology	A clear concentration response relationship is reported – in studies where the dose response test design is employed.
Ecotoxicology	A sufficient number of animals per group to facilitate statistical analysis reported: mortality in control groups reported, observations/findings in positive/negative control clearly reported (where relevant).
Ecotoxicology, Environmental Fate, Residues	Assessment of the statistical power of the assay is possible with reported data.
Ecotoxicology, Environmental Fate, Residues	Statistical methodology is reported (e.g., checking the plots and confidence intervals).
Ecotoxicology	Description of the observations (including time-points), examinations, and analyses performed, with (where relevant) dissections being well documented.
Ecotoxicology	For terrestrial ecotoxicological studies in the laboratory or the field, the substrates used should be adequately described e.g. nature of substrate i.e. species of leaf or soil type.
Ecotoxicology, Environmental Fate, Residues	Field locations relevant / comparable to European conditions.
Ecotoxicology, Environmental Fate, Residues	Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon).
Ecotoxicology, Environmental Fate	Other soils where information on characterization by the parameters: pH, texture, CEC, organic carbon, bulk density, water holding capacity, microbial biomass.
Ecotoxicology, Environmental Fate, Residues	For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year.
Ecotoxicology, Environmental Fate	For soil samples, sampling from A-horizon, top 20 cm layers; soils freshly from field preferred (storage max 3 months at 4 +/- 2°C).
Ecotoxicology, Environmental Fate, Residues	Data on precipitation is recorded.
Environmental Fate	The temperature was in the range between 20-25°C and the moisture was reported.
Environmental Fate	The presence of glyphosate identified in samples were collected from European groundwater, soil, surface waters, sediments or air.
Ecotoxicology	For lab terrestrial studies, the temperature was appropriate to the species being tested and generally should fall within the range between 20-25°C and soil moisture / relative humidity was reported.
Ecotoxicology	For bee studies, temperature of the study should be appropriate to species.
Ecotoxicology	For lab aquatic studies:
	The source and / or composition of the media used should be described.
	The temperature of the water should be appropriate to the species being tested and generally fall within the 15-25°C.

Applied for	Reliability criteria
Ecotoxicology, Residues	The residue data can be linked to a clearly described GAP table, appropriate in the context of the renewal of approval of glyphosate (crop, application method, doses, intervals, PHI).
Ecotoxicology, Environmental Fate, Residues	Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate, and where relevant its metabolites.
Ecotoxicology, Environmental Fate, Residues	Analytical methods are clearly described; and adequate statement of specificity and sensitivity of the analytical methods is included.
Ecotoxicology	Assessment of the ECX for the width of the confidence interval around the median value; and the certainty on the level of protection offered by the median ECX is reported.
Environmental Fate	Radiolabel characterization: purity, specific activity, location of label is reported.
Environmental Fate	If degradation kinetics are included: data tables / model description / statistical parameters for kinetic fit to be provided.
Environmental Fate, Residues	Monitoring data: description of matrix analysed, and analytical methods to be fully described.
Environmental Fate	Clear description of application rate and relevance to approved uses.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 22: Reliability criteria for toxicology – epidemiology and exposure studies

Reliability criteria – toxicology	
Epidemiology studies	Exposure studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines/practices	Study in accordance to valid internationally accepted testing guidelines/practices
Study completely described and conducted following scientifically acceptable standards	Study performed according to GLP
	Study completely described and conducted following scientifically acceptable standards
Test substance	Test substance
Exposure to formulations with only glyphosate as a.i.	Exposure to formulations with only glyphosate as a.i.
Exposure to formulations with glyphosate combined with other a.i.	Exposure to formulations with glyphosate combined with other a.i.
Exposure to various formulations of pesticides	Exposure to various formulations of pesticides
Study	Study
Study design – epidemiological method followed	Study design clearly described
Description of population investigated	Population investigated sufficiently described
Description of exposure circumstances	Exposure circumstances sufficiently described
Description of results	Sampling scheme sufficiently documented
Have confounding factors been considered	Analytical method described in detail
Statistical analysis	Validation of analytical method reported
	Monitoring results reported
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 23: Reliability criteria for toxicology – *in vitro* and *in vivo* studies

Reliability criteria – toxicology and metabolism	
<i>In vitro</i> studies	<i>In vivo</i> studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines	Study in accordance to valid internationally accepted testing guidelines.
Study performed according to GLP	Study performed according to GLP
Study completely described and conducted following scientifically acceptable standards	Study completely described and conducted following scientifically acceptable standards
Test substance	Test substance
Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions)	Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions)
Only glyphosate acid or one of its salts is the tested substance	Only glyphosate acid or one of its salts is the tested substance
AMPA is the tested substance	AMPA is the tested substance
Study	Study
Test system clearly and completely described	Test species clearly and completely described
Test conditions clearly and completely described	Test conditions clearly and completely described
Metabolic activation system clearly and completely described	Route and mode of administration described
Test concentrations in physiologically acceptable range (< 1 mM)	Dose levels reported
Cytotoxicity tests reported	Number of animals used per dose level reported
Positive and negative controls	Method of analysis described for analysis test media
Complete reporting of effects observed	Validation of the analytical method
Statistical methods described	Analytical verifications of test media
Historical negative and positive control data reported	Complete reporting of effects observed
Dose-effect relationship reported	Statistical methods described
	Historical control data of the laboratory reported
	Dose-effect relationship reported
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

3 Search results

The full outcome of the literature search and evaluation is provided below.

Table 24: Summary of the literature search – all technical sections

	Number	Justification
Total number of articles retrieved from the search.	3156	n.a.
Total number of articles after removal of duplicates within all databases.	1648	n.a.
Total number of articles after manual removal of duplicates. ^{a)}	852	n.a.
Number of articles excluded after rapid assessment (title / abstract).	774	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	78	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	35	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	43	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	12	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 25: Results of the article selection process for ecotoxicology

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	150	n.a.
Number of articles excluded after rapid assessment (title / abstract).	121	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	29	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	14	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	15	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	2	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 26: Results of the article selection process for environmental fate

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	85	n.a.
Number of articles excluded after rapid assessment (title / abstract).	83	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	2	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	0	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	2	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	2	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 27: Results of the article selection process for residues

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	16	n.a.
Number of articles excluded after rapid assessment (title / abstract).	15	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	1	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	0	See Table 38
Number of articles not excluded after detailed assessment ^{b)}	1	See Table 32-Table 37
Number of summaries presented in the dossier ^{c)}	1	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 28: Results of the article selection process for toxicology

	Number	Justification
Total number of articles after manual removal of duplicates ^{a)}	96	n.a.
Number of articles excluded after rapid assessment (title / abstract).	50	See the Literature Review Excel File.
Total number of full-text documents assessed in detail	46	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	21	See Table 38
Number of articles not excluded after detailed assessment ^{b)}	25	See Table 32-Table 37
Number of summaries presented in the dossier ^{c)}	7	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 29: Results of the article selection process for analytical methods

	Number	Justification
Total number of articles after manual removal of duplicates ^{a)}	72	n.a.
Number of articles excluded after rapid assessment (title / abstract).	72	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 30: Results of the article selection process for efficacy / agronomy

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	360	n.a.
Number of articles excluded after rapid assessment (title / abstract).	360	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 31: Results of the article selection process for “other non-relevant categories”

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	73	n.a.
Number of articles excluded after rapid assessment (title / abstract).	73	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jan 2020 – Jun 2020) and entries found already in the previous search (Jan 2010 – Dec 2019). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 32: Relevant (category A) & reliable or reliable with restrictions articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
6	CA 5.2.6	Lindberg T. <i>et al.</i>	2020	An integrated transcriptomic- and proteomic-based approach to evaluate the human skin sensitization potential of glyphosate and its commercial agrochemical formulations.	Journal of proteomics, (2020) Vol. 217, Art. No. 103647	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
1	CA 5.5	Crump K. <i>et al.</i>	2020	Accounting for Multiple Comparisons in Statistical Analysis of the Extensive Bioassay Data on Glyphosate.	Toxicological sciences : an official journal of the Society of Toxicology, (2020) Vol. 175, No. 2, pp. 156-167	5.4.1 case a) relevant and provides data for the risk assessment: A summary is presented in the AIR5 dossier under MCA 5.5./026.
8	CA 5.5	Portier C. J. <i>et al.</i>	2020	A comprehensive analysis of the animal carcinogenicity data for glyphosate from chronic exposure rodent carcinogenicity studies.	Environmental health : a global access science source, (2020) Vol. 19, No. 1, pp. 18	5.4.1 case a) relevant and provides data for the risk assessment: A summary is presented in the AIR5 dossier under MCA 5.5./027.
3	CA 5.6	Ganesan S. <i>et al.</i>	2020	Absence of glyphosate-induced effects on ovarian folliculogenesis and steroidogenesis.	Reproductive toxicology, (2020) Vol. 96, pp 156-164	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
12	CA 5.8.2	Yahfoufi Z. A. <i>et al.</i>	2020	Glyphosate Induces Metaphase II Oocyte Deterioration and Embryo Damage by Zinc Depletion and Overproduction of Reactive Oxygen Species.	Toxicology, (2020) Vol. 439, Art. No. 152466	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
4	CA 5.8.3	Gastiazoro M. P. <i>et al.</i>	2020	Glyphosate induces epithelial mesenchymal transition-related changes in human endometrial Ishikawa cells via estrogen receptor pathway.	Molecular and cellular endocrinology, (2020) Vol. 510, Art. No. 110841	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
11	CA 5.8.3	Xia Y. <i>et al.</i>	2020	The endoplasmic reticulum stress and related signal pathway mediated the glyphosate-induced testosterone synthesis inhibition in TM3 cells.	Environmental pollution, (2020) Vol. 260, Art. No. 113949	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
7	CA 6.9	Panseri S. <i>et al.</i>	2020	Occurrence of perchlorate, chlorate and polar herbicides in different baby food commodities.	Food chemistry, (2020) Vol. 330, Art. No. 127205	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
5	CA 7.1.4.2	Gros P. <i>et al.</i>	2020	Leaching and degradation of (13)C2-(15)N-glyphosate in field lysimeters.	Environmental monitoring and assessment, (2020) Vol. 192, No. 2, pp. 127	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
2	CA 7.5	De Polo A. <i>et al.</i>	2019	From the traces in the wells of the urban aqueduct network to the subsequent prohibition of the use of glyphosate: the case of an area of high-intensity wine production in the province of Treviso, Veneto.	Igiene e sanità pubblica, (2019) Vol. 75, No. 6, pp. 451-460	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
10	CA 8.1.4	Turhan D. O. <i>et al.</i>	2020	Developmental and lethal effects of glyphosate and a glyphosate-based product on <i>Xenopus laevis</i> embryos and tadpoles.	Bulletin of environmental contamination and toxicology, (2020) Vol. 104, No. 2, pp. 173-179	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
9	CA 8.6.2	Rogacz D. <i>et al.</i>	2020	Ecotoxicological effects of new C-substituted derivatives of N-phosphonomethylglycine (glyphosate) and their preliminary evaluation towards herbicidal application in agriculture.	Ecotoxicology and environmental safety, (2020) Vol. 194, pp. 110331	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.

Table 33: Relevant (category A) & reliable or reliable with restrictions articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
1	Crump K. <i>et al.</i>	CA 5.5	2020	Accounting for Multiple Comparisons in Statistical Analysis of the Extensive Bioassay Data on Glyphosate.	Toxicological sciences : an official journal of the Society of Toxicology, (2020) Vol. 175, No. 2, pp. 156-167	5.4.1 case a) relevant and provides data for the risk assessment: A summary is presented in the AIR5 dossier under MCA 5.5./026.
2	De Polo A. <i>et al.</i>	CA 7.5	2019	From the traces in the wells of the urban aqueduct network to the subsequent prohibition of the use of glyphosate: the case of an area of high-intensity wine production in the province of Treviso, Veneto.	Igiene e sanità pubblica, (2019) Vol. 75, No. 6, pp. 451-460	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
3	Ganesan S. <i>et al.</i>	CA 5.6	2020	Absence of glyphosate-induced effects on ovarian folliculogenesis and steroidogenesis.	Reproductive toxicology, (2020) Vol. 96, pp 156-164	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
4	Gastiazoro M. P. <i>et al.</i>	CA 5.8.3	2020	Glyphosate induces epithelial mesenchymal transition-related changes in human endometrial Ishikawa cells via estrogen receptor pathway.	Molecular and cellular endocrinology, (2020) Vol. 510, Art. No. 110841	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
5	Gros P. <i>et al.</i>	CA 7.1.4.2	2020	Leaching and degradation of (13)C2-(15)N-glyphosate in field lysimeters.	Environmental monitoring and assessment, (2020) Vol. 192, No. 2, pp. 127	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
6	Lindberg T. <i>et al.</i>	CA 5.2.6	2020	An integrated transcriptomic- and proteomic-based approach to evaluate the human skin sensitization potential of glyphosate and its commercial agrochemical formulations.	Journal of proteomics, (2020) Vol. 217, Art. No. 103647	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
7	Panseri S. <i>et al.</i>	CA 6.9	2020	Occurrence of perchlorate, chlorate and polar herbicides in different baby food commodities.	Food chemistry, (2020) Vol. 330, Art. No. 127205	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
8	Portier C. J. <i>et al.</i>	CA 5.5	2020	A comprehensive analysis of the animal carcinogenicity data for glyphosate from chronic exposure rodent carcinogenicity studies.	Environmental health : a global access science source, (2020) Vol. 19, No. 1, pp. 18	5.4.1 case a) relevant and provides data for the risk assessment: A summary is presented in the AIR5 dossier under MCA 5.5./027.
9	Rogacz D. <i>et al.</i>	CA 8.6.2	2020	Ecotoxicological effects of new C-substituted derivatives of N-phosphonomethylglycine (glyphosate) and their preliminary evaluation towards herbicidal application in agriculture.	Ecotoxicology and environmental safety, (2020) Vol. 194, pp. 110331	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
10	Turhan D. O. <i>et al.</i>	CA 8.1.4	2020	Developmental and lethal effects of glyphosate and a glyphosate-based product on <i>Xenopus laevis</i> embryos and tadpoles.	Bulletin of environmental contamination and toxicology, (2020) Vol. 104, No. 2, pp. 173-179	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
11	Xia Y. <i>et al.</i>	CA 5.8.3	2020	The endoplasmic reticulum stress and related signal pathway mediated the glyphosate-induced testosterone synthesis inhibition in TM3 cells.	Environmental pollution, (2020) Vol. 260, Art. No. 113949	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.
12	Yahfoufi Z. A. <i>et al.</i>	CA 5.8.2	2020	Glyphosate Induces Metaphase II Oocyte Deterioration and Embryo Damage by Zinc Depletion and Overproduction of Reactive Oxygen Species.	Toxicology, (2020) Vol. 439, Art. No. 152466	5.4.1 case a) relevant and provides data for the risk assessment: A summary for this article is provided.

Table 34: Relevant but supplementary (category B) articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
43	CA 5.1	Zoller O. <i>et al.</i>	2020	Urine glyphosate level as a quantitative biomarker of oral exposure.	International journal of hygiene and environmental health, (2020) Vol. 228, Art. No.113526	5.4.1 case b) relevant but supplementary information: This was a study with human volunteers. The trial was designed to ensure comparable exposure levels to glyphosate among participants who consumed diets with low content of glyphosate residue during the 4-day trial, except for the single meal with targeted amount of glyphosate and AMPA corresponding to an intake of 196.8 µg of glyphosate and 1.67 µg of AMPA. Only urine was collected and analysed for glyphosate and AMPA. Blood and faeces were not collected and/or analysed. This goal of the study was to estimate oral glyphosate intake using urinary biomonitoring data. However, the authors recognised that the determination of blood concentrations is necessary to improve human bioavailability data. Comparison of urinary data in humans in this study with those measured in the rat studies suggest that the systemic availability is much lower in humans than in rats and could be about 20-fold lower. However, in the absence of a mass balance, and a very low recovery of glyphosate and AMPA, the data should be considered unreliable. Given the knowledge that orally dosed glyphosate is mostly excreted via the faeces, an appropriate study design to address mass balance could easily have been implemented to make this a robust and informative investigation. Low recovery rates of glyphosate and AMPA suggest a very large capacity for errors. The study design is inadequate to confirm reliability of the findings. The lack of mass balance of analytes, despite common knowledge that orally dosed glyphosate is mostly excreted in faeces, is disappointing, given the ease with which a mass balance could have been assessed. The article was downgraded to Category B due to its non-reliability.
37	CA 5.3	Tang Q. <i>et al.</i>	2020	Glyphosate exposure induces inflammatory responses in the small intestine and alters gut microbial composition in rats.	Environmental pollution, (2020) Vol. 261, Art. No. 114129	5.4.1 case b) relevant but supplementary information: The rats were gavaged with 0, 5, 50, and 500 mg/kg of body weight glyphosate for 35 continuous days. The different segments of the small intestine were sampled to measure indicators of oxidative stress, ion concentrations and inflammatory responses, and fresh feces were collected for microbiota analysis. The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. No GLP status stated, no HCD provided and no purity of glyphosate stated. Fundamental parameters to understand animal health and toxicology endpoints are not reported. Therefore the context of the study results can not be interpreted with any degree of certainty. The article is not reliable.
16	CA 5.5	Berry C.	2020	Glyphosate and cancer: the importance of the whole picture.	Pest management science, (2020); doi: 10.1002/ps.5834; Online ahead of print.	5.4.1 case b) relevant but supplementary information: The author is providing a general picture of the carcinogenic and genotoxic profile of Glyphosate by commenting the different studies available and the different conclusions made by IARC and Regulatory authorities. There is no evidence in the animals studies to support the IARC conclusion that glyphosate is a probable human carcinogen. The article does not provide any new information.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
24	CA 5.5	Jeon S. <i>et al.</i>	2020	Glyphosate influences cell proliferation in vitro.	Frontiers in Life Science, (2020) Vol. 13, No. 1, pp. 54-65	5.4.1 case b) relevant but supplementary information: Glyphosate was tested in vitro at a range of doses to investigate its effects on cell growth and proliferation in human cells. In conclusion, Glyphosate increases the rate of cell growth in human embryonic kidney 293 (HEK293) cells. Glyphosate promotes cell proliferation by activating gene expression of cell cycle regulators in humans in vitro. Useful information but not altering risk assessment and data requirement and difficult to be used because no HCD provided. No positive control were used, no statistics methods were described. Furthermore, no OECD guideline followed, no GLP status stated. The article is not reliable.
14	CA 5.6	Ait-Bali Y. <i>et al.</i>	2020	Pre- and postnatal exposure to glyphosate-based herbicide causes behavioral and cognitive impairments in adult mice: evidence of cortical ad hippocampal dysfunction.	Archives of toxicology, (2020) Vol. 94, No. 5, pp. 1703-1723	5.4.1 case b) relevant but supplementary information: In vivo study on pre and post natal effects of Roundup on swiss mice at 2 different doses only, no OECD guideline followed, no GLP status stated, no HCD provided. Oral gavage dosing of formulated product is not relevant to real life exposure scenarios. Environmental fate and metabolism for glyphosate active ingredient versus surfactants are different, and oral co-exposures to mammals at the excessively high doses tested in this case are considered irrelevant to human health risk assessment. In addition, insufficient information is provided to determine which formulation was tested and whether it is the glyphosate EU representative formulation.
17	CA 5.6	Cai W. <i>et al.</i>	2020	Low-dose Roundup induces developmental toxicity in bovine preimplantation embryos in vitro.	Environmental science and pollution research international, (2020) Vol. 27, No. 14, pp. 16451-16459	5.4.1 case b) relevant but supplementary information: The effects of Roundup at 3 doses was investigated on the bovine preimplantation embryo. Direct dosing of formulated product to fertilized embryos in vitro is not relevant to real life exposure scenarios. Environmental fate, metabolism and pharmacokinetics for glyphosate active ingredient versus surfactants are very different, and oral co-exposures to mammals at the excessively high doses tested in this case are considered irrelevant to livestock and human health risk assessments. In addition, insufficient information is provided to determine which formulation was tested and whether it is the glyphosate EU representative formulation. No OECD guideline followed, no GLP status stated, no HCD provided and no positive control.
29	CA 5.7	Neto de Silva K. <i>et al.</i>	2020	Glyphosate-based herbicide impairs energy metabolism and increases autophagy in C6 astrogloma cell line.	Journal of toxicology and environmental health. Part A, (2020) Vol. 83, No. 4, pp. 153-167	5.4.1 case b) relevant but supplementary information: In vitro study on the effects of micromolar concentrations of a glyphosate-based herbicide on energy metabolism and mitochondrial mass in astrogloma cell line exposed for 24 h to the herbicide at 3 concentrations below 160 µM. Insufficient information provided to identify which formulation was tested. No positive control was used, no statistics methods were described, no OECD guideline followed, no GLP status stated, no HCD provided. In addition, astrocytes in real life are not co-exposed to the combination of glyphosate + surfactant formulations, based on their very different environmental fates and pharmacokinetics.
26	CA 5.8.2	Levine S. L. <i>et al.</i>	2020	Review and Analysis of the Potential for Glyphosate to Interact with the Estrogen, Androgen, and Thyroid Pathways.	Pest management science, (2020), DOI 10.1002/ps.5983	5.4.1 case b) relevant but supplementary information: A systematic literature review was performed including US EPA EDSP Tier 1 battery assessment, guideline regulatory studies, ESDP including 5 in vitro and 6 in vivo assays to evaluate the EAT pathways. From the available literature, it was concluded that glyphosate does not have an endocrine disrupting potential through estrogenic, androgenic or steroidogenic activity. The review includes relevant literature which has been used for the ED assessment during the current submission process. It can therefore serve as supporting information, however as a review it does not provide new primary data or alter the risk assessment. Therefore, the review has been classified as a relevant but supplementary only (EFSA 2092 GD Point 5.4.1 category B).

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
30	CA 5.8.2	Parks C. G. <i>et al.</i>	2019	Lifetime pesticide use and antinuclear antibodies in male farmers from the agricultural health study	Frontiers in Immunology (2019) Vol. 10, Art. No. 1476	5.4.1 case b) relevant but supplementary information: The development of systemic autoimmunity in response to pesticide exposure was investigated in a retrospective study farmers. Serum antinuclear autoantibodies were measured by immunofluorescence on Hep-2 cells in 668 male farmers. The effect of lifetime use of 46 pesticides (glyphosate among them) on ANA were investigated. The results for glyphosate use demonstrate no increase the risk of farmers developing systemic autoimmunity. This information is useful in a weight of evidence assessment for the measured endpoint, which, however, is not a critical endpoint identified for human health risk assessment of glyphosate.
13	CA 5.9	Abdel-Halim K. Y. <i>et al.</i>	2019	Glyphosate and pendimethalin in breast milk samples from Egyptian rural areas: a pilot study for infant's risk assessment	International Journal of Advanced Research, (2019) Vol. 7, No. 9, pp. 991-1002	5.4.1 case b) relevant but supplementary information: This article claims that glyphosate was detected in breast milk. There are several technical issues with this study: 1st: The solubility of glyphosate in toluene is reported as only 36 PPM. The highest sample values the paper claims is just under 30 PPM. So if we had roughly 30 PPM of glyphosate in milk and took 5 mL for analysis then the toluene would have to be capable of solubilizing 150 PPM of glyphosate! 2nd: And this is a key issue – the HPLC method lists an excitation wavelength that is higher than the emission wavelength! There are several studies evaluating whether glyphosate is detectable in cows milk. A study in human breast milk also was conducted and concluded that glyphosate was not detectable. References: 1. Michelle K McGuire, Mark A McGuire, William J Price, Bahman Shafii, Janae M Carrothers, Kimberly A Lackey, Daniel A Goldstein, Pamela K Jensen, John L Vicini, Glyphosate and aminomethylphosphonic acid are not detectable in human milk, The American Journal of Clinical Nutrition, Volume 103, Issue 5, May 2016, Pages 1285–1290, https://doi.org/10.3945/ajcn.115.126854 2. EFSA. (2018). National summary reports on pesticide residue analysis performed in 2016. EFSA Journal, 16(7), 5348. https://doi.org/org/10.2903/sp.efsa.2018.EN-1454 3. EFSA. (2019). The 2017 European Union report on pesticide residues in food. EFSA Journal, 17(6), 5743. https://doi.org/10.2903/j.efsa.2019.5743 4. EFSA. (2020). The 2018 European Union report on pesticide residues in food. EFSA Journal, 18(4), e06057. https://doi.org/10.2903/j.efsa.2020.6057 5. FDA. (2018). Pesticide residue monitoring program. Fiscal year 2016 pesticide report. FDA. https://www.fda.gov/Food/FoodbornellnessContaminants/Pesticides/ucm618247.htm 6. FDA. (2019). Pesticide residue monitoring program fiscal year 2017 pesticide report. https://www.fda.gov/food/pesticides/pesticide-residue-monitoring-2017-report-and-data 7. Ehling, S., & Reddy, T. M. (2015). Analysis of glyphosate and aminomethylphosphonic acid in nutritional ingredients and milk by derivatization with fluorenylmethyloxycarbonyl chloride and liquid chromatography-mass spectrometry. Journal of Agricultural and Food Chemistry, 63(48), 10562-10568. https://doi.org/10.1021/acs.jafc.5b04453 8. NZ Ministry for Primary Industries. (2012). Dairy national chemical contaminants programme - raw milk result summary 2011/12. Retrieved 12/15/2015 from http://www.foodsafety.govt.nz/elibrary/industry/dairy-nccp-results-summary.pdf 9. Steinborn, A., Alder, L., Michalski, B., Zomer, P., Bendig, P., Martinez, S. A., Mol, H. G., Class, T. J., & Costa Pinheiro, N. (2016). Determination of glyphosate levels in breast milk

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						samples from Germany by LC-MS/MS and GC-MS/MS. Journal of Agricultural and Food Chemistry, 64(6), 1414-1421., https://doi.org/10.1021/acs.jafc.5b05852 10. von Soosten, D., Meyer, U., Hütther, L., Dänicke, S., Lahrssen-Wiederholt, M., Schafft, H., Spolders, M., & Breves, G. (2016). Excretion pathways and ruminal disappearance of glyphosate and its degradation product aminomethylphosphonic acid in dairy cows. Journal of Dairy Science, 99(7), 5318-5324. https://doi.org/10.3168/jds.2015-10585 11. Zhao, J., Pacenka, S., Wu, J., Richards, B. K., Steenhuis, T., Simpson, K., & Hay, A. G. (2018). Detection of glyphosate residues in companion animal feeds. Environmental Pollution, 243(Pt B), 1113-1118. https://doi.org/10.1016/j.envpol.2018.08.100 The article is not reliable.
18	CA 5.9	Donato F. <i>et al.</i>	2020	Exposure to glyphosate and risk of non-Hodgkin lymphoma and multiple myeloma: an updated meta-analysis.	La Medicina del lavoro, (2020) Vol. 111, No. 1, pp. 63-73	5.4.1 case b) relevant but supplementary information: The publication is considered not reliable because there is nothing that has been done in this (or other) meta-analysis to address recall bias, selection bias, and failure to control for confounding factors in the NHL case-control studies. The article was downgraded to Category B due to its non-reliability.
19	CA 5.9	Eddleston M.	2020	Poisoning by pesticides.	Medicine, (2020) Vol. 48, No. 3, pp. 214-217	5.4.1 case b) relevant but supplementary information: This is a review article discussing clinical features and management of pesticide overdoses. The article comments that glyphosate has much lower toxicity in acute overdose than older pesticides and discusses the use of supportive care in these overdoses. Since this describes the management of suicidal overdoses it should not impact the risk assessment / re-registration.
31	CA 5.9	Rajput R. <i>et al.</i>	2019	Haemodialysis as an imperative treating modality in severe glyphosate-surfactant poisoning.	Journal, Indian Academy of Clinical Medicine, (2019) Vol. 20, No. 3-4, pp. 224-226	5.4.1 case b) relevant but supplementary information: This is a case report of a patient who developed hyperkalaemia, renal failure and pulmonary edema after a suicidal ingestion of formulated glyphosate. These clinical features are common with large ingestions. Hemodialysis is standard of care in cases such as these. This report raises no new clinical features regarding this type of overdose and should not impact risk assessment / re-registration.
32	CA 5.9	Ren Y. <i>et al.</i>	2020	Cases report of gastrointestinal hemorrhage caused by glyphosate herbicides.	Acta Medica Mediterranea, (2020) Vol. 36, No. 3, pp. 1611-1614	5.4.1 case b) relevant but supplementary information: This article describes two patients with GI hemorrhage after formulated glyphosate ingestion. According to the history, the first patient drank excessive amounts of ethanol for a long time, which in and of itself can contribute to GI ulceration and bleeding. He also ingested triazolone. This patient's course appears to be atypical as the patient appears to have been stable on admission, was in the hospital for weeks, underwent multiple endoscopic procedures for 2 weeks after ingestion and later developed significant GI bleeding necessitating a gastrectomy. In formulated glyphosate overdoses, corrosive injury to the GI tract occurs early due to the surfactant. The second patient in this report also presented with corrosive injury to the GI tract which is not unexpected. Since this paper describes suicidal ingestions it should not impact the risk assessment / re-registration.
36	CA 5.9	Soukup S. T. <i>et al.</i>	2020	Glyphosate and AMPA levels in human urine samples and their correlation with food consumption: results of the	Archives of toxicology, (2020) Vol. 94, No. 5, pp. 1575-1584	5.4.1 case b) relevant but supplementary information: The authors calculated the intake of glyphosate and AMPA based on urinary concentrations and checked this value against the EU acceptable daily intake (ADI) value for glyphosate. The exposure to glyphosate and AMPA was found to be very low. Quantifiable levels of glyphosate and/or AMPA was detected in 8.3% (25 out of 301) of the participants with the highest reported value (0.63 µg/kg BW) being 0.13% of the ADI.

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				cross-sectional KarMeN study in Germany.		24-hr urine samples were collected from 301 adults for analysis of glyphosate. The study subjects were recruited to be healthy and not taking medications. The glyphosate exposures as a percent of the ADI were calculated. However, unlike previous studies, this calculation was not derived using assumptions for body weight or volume of urine. Rather, ADIs were calculated for each study subject using their own body weight and 24-hr urine excretion. Samples were analyzed using an LC-MS/MS that was modified by the procedure of Jensen <i>et al.</i> (1), and 66.5% had neither no detectable glyphosate nor AMPA in urine. Glyphosate and/or AMPA was quantifiable detected in 8.3% of participants with a maximum glyphosate exposure of 0.63 µg/kg BW, which was 0.13% of the ADI. The maximum intake of AMPA + glyphosate corresponded to 0.16% of the ADI. This study also used 24-hr dietary recalls and did rank-order correlations to estimate food sources of glyphosate and AMPA. This was done based solely of the amount of food and not glyphosate content of the food. Nevertheless, they found that consumption of pulses and mushrooms were correlated with glyphosate and AMPA in urine, respectively. Absorbed glyphosate is not metabolized in the body suggesting that ingestion of AMPA per se, not glyphosate, was responsible for urinary AMPA. As a result of their study, the authors concluded that “based on the current risk assessment of glyphosate by EFSA, such exposure levels are not expected to pose any risk to human health. The detected associations with consuming certain foods are in line with reports on glyphosate and AMPA residues in food.” References 1. Jensen, P. K., Wujcik, C. E., McGuire, M. K., and McGuire, M. A. (2016) Validation of reliable and selective methods for direct determination of glyphosate and aminomethylphosphonic acid in milk and urine using LC-MS/MS. <i>Journal of Environmental Science and Health. Part. B, Pesticides, Food Contaminants, and Agricultural Wastes</i> 51, 254-259
38	CA 5.9	Uengchuen K. <i>et al.</i>	2020	Health risk assessment on the glyphosate exposure of knapsack sprayers.	Indian Journal of Public Health Research and Development, (2020) Vol. 11, No. 3, pp. 2088-2093	5.4.1 case b) relevant but supplementary information: This article describes an assessment tool designed by the researchers to evaluate level of exposure based on PPE use, self-reported symptoms 6 months after use and frequency of use. They found that most farmers used PPE and had minimal symptoms such as burning eyes which may be due to the surfactant in formulations. There were no severe symptoms and no description of long-term outcomes. This descriptive article describes self-reported non-specific symptoms (nausea, headache, rash, burning eyes) in glyphosate users and should not affect the risk assessment / re-registration.
39	CA 5.9	Yang F. <i>et al.</i>	2020	Acute obstructive fibrinous laryngotracheobronchitis induced by severe glyphosate surfactant intoxication: A case report.	World journal of emergency medicine, (2020) Vol. 11, No. 2, pp. 125-126	5.4.1 case b) relevant but supplementary information: This is a case report describing a patient who developed fibrinous tracheobronchitis after a suicide attempt with formulated glyphosate. Since the surfactant can cause corrosive injury and the patient had evidence of aspiration, this would be a possible side effect. Since this reflects a suicidal ingestion, it should not impact the risk assessment / re-registration.

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41	CA 5.9	Zhang F. <i>et al.</i>	2020	Concentration Distribution and Analysis of Urinary Glyphosate and Its Metabolites in Occupationally Exposed Workers in Eastern China.	International journal of environmental research and public health, (2020) Vol. 17, No. 8, Art. No. 2943	5.4.1 case b) relevant but supplementary information: This study followed workers who were occupationally exposed to glyphosate in a manufacturing facility. They measured ambient air concentrations and then measured urinary concentrations of glyphosate and AMPA and found that the detection rates of glyphosate (>0.020mg/L) and AMPA (>0.010mg/L) were 86.6% (116/134) and 81.3% (109/134), respectively. The median values were 0.292 mg/L and 0.068 mg/L for urinary glyphosate and AMPA. There was variability in exposure based on where the worker was physically in the plant. This study was looking at biomarkers for exposure and makes no health claims regarding these exposures.
15	CA 8.2.1	Al-Kawaz J. M.	2019	Effect of acute toxicity of glyphosate in gold fish <i>Carassius auratus</i> .	Annals of Tropical Medicine and Public Health, (2019) Vol. 22, No. Special Issue 5, Art No. SP173	5.4.1 case b) relevant but supplementary information: This is a dose-response laboratory study on the 96-h acute toxicity to goldfish (<i>Carassius auratus</i>) with an endpoint of 96-h LC50 = 14.55 ppm. 4 concentrations were tested. Behavioural, morphological and histopathological changes were recorded. No analytical verifications, no control results and no information on origin / any previous exposure of fishes is available. No statistical information provided. In addition, Glyphosate was not sufficiently documented. Fish used in test were collected from fish shops and they were not correctly reported. Previous exposure to pesticides cannot be excluded. The article was downgraded to Category B due to its non-reliability.
20	CA 8.2.1	Erhunmwunse N. O. <i>et al.</i>	2018	Acute toxicity of glyphosate-based Isopropylamine formulation to juvenile African catfish (<i>Clarias gariepinus</i>).	Nigerian Journal of Basic and Applied Sciences (2018) Vol. 26, No. 2, pp. 97-101	5.4.1 case b) relevant but supplementary information: This is a dose-response laboratory study on the 96-h acute toxicity to African catfish (<i>Clarias gariepinus</i>) juveniles with an endpoint of 96-h LC50 = 300 mg/L. However, there is a lack of analytical verifications of the substance concentration in water. No clear origin of the fishes. Unit of the endpoint is unclear (no information whether the endpoint refers to the formulation, glyphosate or its salt). Test item cannot be identified from the article. Test design stated as being based on total residual chlorine in abstract - but it does state in the methods that OECD (1992) procedure was used, which refers to the OECD 203 acute test guideline from July 1992. Concerning fish loading - if the test employed 60 L aquariums - which cannot be confirmed, the loading is too high (approx. 18 g fish/L) compared to OECD 1992 procedure for acute fish testing of approx 1 g fish/L. The article was downgraded to Category B due to its non-reliability.

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25	CA 8.2.1	Kharat T. L. <i>et al.</i>	2016	Effect of glyphosate roundup on oxygen consumption in freshwater fish <i>Rasbora daniconius</i>	Ecscan, (2016) Vol. 9, No., Spec.Iss., pp. 567-571	5.4.1 case b) relevant but supplementary information: This is a dose-response laboratory study on the 96-h acute toxicity to a local fish species (<i>Rasbora daniconius</i>) with an endpoint of 96-h LC50 = 5.66 mg/L. 7 concentrations were tested. Oxygen consumption was measured in a separate test when fishes are exposed to control, lethal and sub-thel concentration of the formulation in water. Behavioural and morphological observations were also made. There is a lack of analytical verifications. No statistical analysis. Glyphosate was not sufficiently documented, No information given about the control. Other relevant methodological information not provided. Wild-caught fish used in test, previous exposure to pesticides cannot be excluded. No test guideline stated. Fitness of test population unknown. Exposure test conditions, test media preparation, environmental controls - all were not defined / no water quality data reported in the results. Fish weights reported, but as test design not presented, the fish loading and influence on outcome of results cannot be determined. Uncertainty in the results based on errors in the results table i.e. 70% mortality stated to have occurred at the 4.6 mg/L rate, when the text and the report table suggest only 30% mortality. The article was downgraded to Category B due to its non-reliability.
33	CA 8.2.1	Sanudi F. <i>et al.</i>	2018	Lethal toxicity of glyphosate herbicide on koi carp, <i>Cyprinus carpio</i> (Linnaeus, 1758) fingerlings.	Toxicology International, (2018) Vol. 25, No. 2, pp. 139-141	5.4.1 case b) relevant but supplementary information: Bioassay experiments were conducted to determine the lethal toxicity of glyphosate herbicide on Koi carp, <i>Cyprinus carpio</i> fingerlings. The fishes were exposed to different concentrations of glyphosate and mortality was recorded after every 6 h for a period of 96 h. The 96 h LC50 concentration for glyphosate on Koi carp fingerlings was found to be 33.2 mg/L. There is no test item information, nor biological observation data presented to corroborate the findings, in addition no chemical analysis and therefore exposure cannot be confirmed. The article was downgraded to Category B due to its non-reliability.
34	CA 8.2.1	Selvarani A. J. <i>et al.</i>	2019	Acute toxicity of glyphosate herbicide on Nile tilapia (<i>Oreochromis niloticus</i>)	International Journal of Current Microbiology and Applied Sciences, (2019) Vol. 8, No. 10, pp. 61-68	5.4.1 case b) relevant but supplementary information: This test was performed in a static renewal regime with Nile tilapia (<i>Oreochromis niloticus</i>) exposed to 5 different concentrations of glyphosate (15.33, 30.67, 61.34, 122.68 and 245.36 mg/L) for 96 hours. Mortality was recorded but also the gill, liver and kidney tissues were dissected out. Lack of analytical verifications of the substance concentration in water but exposure medium was changed every 24 h to maintain the desired concentrations. The test item is not identified. There is no chemical analysis. Water quality measurements have / appear to have only been done at the test start. A table is presented, but whether this is starting or duration derived values is unknown. Fish loading during the 96 hr test is excessive. 10 x 100 g fish in 50 litres = 20 g fish / litre. US EPA requires 0.8 g fish/L; OECD requires 1.0 g/L. This study would be considered invalid in the EU and the US for these reasons. The article was downgraded to Category B due to its non-reliability.

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35	CA 8.2.4.2; CA 8.2.6.2	Solis-Gonzalez G. <i>et al.</i>	2019	Acute toxicity of N-(phosphonomethyl) glycine herbicide on planktonic microorganisms <i>Artemia franciscana</i> and <i>Microcystis aeruginosa</i> .	TIP Revista Especializada en Ciencias Químico-Biológicas, (2019) Vol. 22, pp. 1-8	5.4.1 case b) relevant but supplementary information: The aim of this research was to evaluate the median lethal concentration at 24h in <i>Artemia franciscana</i> , as well as the median population inhibitory concentration and the coefficient of form in the cyanobacterium <i>Microcystis aeruginosa</i> in aquatic ecosystems. The calculated endpoint for <i>A. franciscana</i> was 24-h LC50 = 0.31 mg/L and for <i>M. aeruginosa</i> was 72-h ErC50 = 53.95 mg/L. Lack of analytical verifications during the test. Tested concentrations and dissolved oxygen (for invertebrate species) was not reported. For the additional aquatic invertebrate species, mortality was calculated at 24h (instead of at 48h). As raw data are not provided, it is not possible to check the validity criteria of the tests. The endpoints and the performance of the controls cannot be validated. The article was downgraded to Category B due to its non-reliability.
28	CA 8.2.6	Nagai T.	2019	Sensitivity differences among seven algal species to 12 herbicides with various modes of action.	Journal of Pesticide Science (2019) Vol. 44, No. 4, pp. 225-232	5.4.1 case b) relevant but supplementary information: For glyphosate no data presented that could impact the endpoints used in the risk assessment as they have been achieved using a method that is not recognised at the EU level. Reference to available data is considered a secondary source and therefore not relevant to EU renewal. Validity criteria not reported. ErC50 were calculated at 96h instead of at 72h. The initial green algae biomass concentration was not reported. The test substance was not clearly identified (purity unclear). Control results are missing.
40	CA 8.2.6	Ye J. <i>et al.</i>	2019	The Growth, Apoptosis and Oxidative Stress in <i>Microcystis viridis</i> Exposed to Glyphosate	Bulletin of environmental contamination and toxicology (2019) Vol. 103, No. 4, pp. 585-589	5.4.1 case b) relevant but supplementary information: Provides information on the effects of glyphosate on the growth of <i>Microcystis viridis</i> at 4 different concentrations every 24 h for 10 days but no endpoints are given. The algal growth inhibition test was conducted according to the OECD guideline 201-Freshwater Alga and Cyanobacteria (2011). However, as no raw data and only results in figures were presented, it is not possible to check its validity criteria. No reference substance has been tested. Analytical verifications were performed but it is not clear in the study whether they are only made at the test start or also during the study. Analytically, over a 3 day period, glyphosate is very stable under illuminated conditions. Under 240 hours exposure, it is highly unlikely that the authors could have achieved such high recoveries, hence the thought would be that the measured values presented were initial measured concentrations. The duration of the study is longer than recommended (10 days instead of 3), but growth rate is recorded after 72 h. There is not sufficient information presented to corroborate the findings.

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42	CA 8.2.6.2	Zhang Y. <i>et al.</i>	2016	Inhibitory activity of 26 herbicides against the growth of <i>Scenedesmus obliquus</i>	Anhui Nongye Kexue, (2016) Vol. 44, No. 23, pp. 132-133	5.4.1 case b) relevant but supplementary information: The aim of this research was to determine the inhibitory activities of 26 herbicides against the growth of the microalgae <i>Scenedesmus obliquus</i> using an absorption spectrophotometry method. Among the 26 herbicides, glyphosate was categorized as low toxic (72 h EyC50 = 73.9 mg/L) and glyphosate-isopropylammonium (72 h EyC50 = 2.21 mg/L) as moderately toxic. Methodology of the test is poorly described and then only final conclusions are reported. The article was published in non-peer reviewed journal. Lack of analytical verifications during the test. pH not reported. Test substance is not clearly identified and tested rates are not reported. The response variable was given as yield, which may be needed to fulfil specific regulatory requirements in some EU countries. However, the data basis of the endpoint is unclear as it was also stated that inhibition concentration based on biomass was calculated. The inhibition rate was calculated using the absorption of the tested solutions and the conversion factor (cell number vs. absorption) is not known. The strain/ origin of the tested organisms is not sufficiently reported. As raw data are not provided, it is not possible to check the validity criteria of the tests. The endpoints and the performance of the controls cannot be validated. The article was downgraded to Category B due to its non-reliability.
22	CA 8.2.8	Gonzalez D. <i>et al.</i>	2019	Freshwater periphyton response to technical-grade and two commercial formulations of glyphosate.	Ecologia Austral, (2019) Vol. 29, No. 1, pp. 20-27	5.4.1 case b) relevant but supplementary information: The effects of a single glyphosate concentration (3 mg/L; 2, 5 and 9 days after application) provided by different means (pure glyphosate and 2 different formulations) on the structure of the microbial community in a freshwater microcosm were investigated. Pigments concentration, dry weight, ash-free dry weight, and algal density were determined. Effects on the control were provided and analytical verifications were made. An increase of Cyanobacteria and a decrease of algae abundances were registered in all treatments with the herbicide. The effect was greater for the formulations and lower with technical-grade glyphosate, suggesting that additives in the commercial formulations may enhance glyphosate effects. The test is not performed according to any OECD guidance, and no endpoints are given. The study is well written and published in an SCI journal. The article presents results for a microcosm type experiment where by 2 Litre treatment units were established with periphyton grown on substrates from a mesocosm. All substrates were pre-exposed to mesocosm water for 36 days, after which time substrates became colonised. Microbial communities were not assessed. Test water was prepared from centrifuged mesocosm water and then 5 pre-grown substrate boards were suspended in each of the three treatments + control. The test does not follow a recognised test design and there is some uncertainties with the methods used for identifying species and for example, how were dead diatoms determined. Despite these substrates being naturally colonised, there is no discussion over the zooplankton community that would also have been present on the substrates including / but not limited to rotifers. The influence of other factors on the periphyton assemblages on the substrates is not discussed.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
27	CA 8.2.8	Lu T. <i>et al.</i>	2020	Understanding the influence of glyphosate on the structure and function of freshwater microbial community in a microcosm.	Environmental pollution, (2020) Vol. 260, Art. No. 114012	5.4.1 case b) relevant but supplementary information: The effects of single glyphosate concentration (2.5 mg/L, 15 days) on the structure and function of microbial communities in a freshwater microcosm were investigated. This treatment did not significantly alter the physical and chemical condition of the microcosm or the composition of the main species in the community, but the transcriptions of some cyanobacteria were significantly influenced. Under glyphosate stress, the microbial community structure did not change much, but the microbes' function varied a lot. The test is not preformed according to any OECD guidance, but the outcomes on the aquatic microbial community (algae, cyanobacteria) can be relevant for the risk assessment but no endpoints are given. There is a lack of analytical verifications of the product concentration on the artificial medium and that the samples are from a lake and therefore, previous exposure to pesticides cannot be excluded.
23	CA 8.6.	Guo L. <i>et al.</i>	2020	Effects of glyphosate and paraquat on root morphology and aboveground growth of <i>Prunus persica</i> seedlings.	Ying yong sheng tai xue bao = The journal of applied ecology, (2020) Vol. 31, No. 2, pp. 524-532	5.4.1 case b) relevant but supplementary information: The aim of the study is to examine the effects of two herbicides (glyphosate and paraquat) on vegetative growth, root structure, root-tip cell mitosis and photosynthesis in peach (<i>Prunus persica</i>) seedlings. The growth of both shoots and roots of the <i>P. persica</i> seedlings was significantly inhibited by glyphosate applied at 2.5 g/L with a plant height decrease of 31.5% compared to control. Total root length, root surface area, root volume and the number of root tips also decreased compared to the control by 39.5%, 39.5%, 49.8% and 44.6%, respectively. The test does not follow any of the recommended OECD protocols for testing terrestrial plants at the EU level. Furthermore, the test substance is not clearly identified - it is unclear whether it is a product or a technical substance. However, the test item used cannot be related to the EU representative formulation as it was stated that the product used was a 300 g/L formulation - but no other formulation details are presented. Exposure concentrations in the spray were not confirmed. No endpoints nor apical measurements presented that can be related to an EU level risk assessment for renewal purposes. The article is not reliable.
21	CP 10.3.1.1.1	Faita M. R. <i>et al.</i>	2020	Glyphosate-based herbicides and <i>Nosema</i> sp. microsporidia reduce honey bee (<i>Apis mellifera</i> L.) survivability under laboratory conditions	Journal of Apicultural Research, (2020) Vol. 59, pp. 332-342	5.4.1 case b) relevant but supplementary information: This is an acute oral toxicity test on bees performed according to the OECD 213. Collected bees in winter and spring were orally exposed to Roundup alone, <i>Nosema</i> spp. spores and a combination of both. 48-h survival after exposure to Glyphosate only (calculated as 0.08 µg a.s./bee, considering an average food consumption of 30 µL/bee) was above 95% for both winter and spring collected bees. Mortality increased when exposed to the mixture with <i>Nosema</i> spp. spores. One single glyphosate concentration and a control was tested. The study is published in a SCI peer-reviewed journal and provides relevant toxicological information on the acute oral risk to bees but no endpoints are given. There are some lacking information: no RF test conducted, no positive control was used, performance of hive was not reported. In addition, RNA profiling not used as an endpoint is EU Annex I renewal ecotox risk assessment and the outcome of the study is not very useful for the risk assessment because the tested rate is sub-lethal.

Table 35: Relevant but supplementary (category B) articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
13	Abdel-Halim K. Y. <i>et al.</i>	CA 5.9	2019	Glyphosate and pendimethalin in breast milk samples from Egyptian rural areas: a pilot study for infant's risk assessment	International Journal of Advanced Research, (2019) Vol. 7, No. 9, pp. 991-1002	5.4.1 case b) relevant but supplementary information: This article claims that glyphosate was detected in breast milk. There are several technical issues with this study: 1st: The solubility of glyphosate in toluene is reported as only 36 PPM. The highest sample values the paper claims is just under 30 PPM. So if we had roughly 30 PPM of glyphosate in milk and took 5 mL for analysis then the toluene would have to be capable of solubilizing 150 PPM of glyphosate! 2nd: And this is a key issue – the HPLC method lists an excitation wavelength that is higher than the emission wavelength! There are several studies evaluating whether glyphosate is detectable in cows milk. A study in human breast milk also was conducted and concluded that glyphosate was not detectable. References: 1. Michelle K McGuire, Mark A McGuire, William J Price, Bahman Shafii, Janae M Carrothers, Kimberly A Lackey, Daniel A Goldstein, Pamela K Jensen, John L Vicini, Glyphosate and aminomethylphosphonic acid are not detectable in human milk, The American Journal of Clinical Nutrition, Volume 103, Issue 5, May 2016, Pages 1285–1290, https://doi.org/10.3945/ajcn.115.126854 2. EFSA. (2018). National summary reports on pesticide residue analysis performed in 2016. EFSA Journal, 16(7), 5348. https://doi.org/10.2903/sp.efsa.2018.EN-1454 3. EFSA. (2019). The 2017 European Union report on pesticide residues in food. EFSA Journal, 17(6), 5743. https://doi.org/10.2903/j.efsa.2019.5743 4. EFSA. (2020). The 2018 European Union report on pesticide residues in food. EFSA Journal, 18(4), e06057. https://doi.org/10.2903/j.efsa.2020.6057 5. FDA. (2018). Pesticide residue monitoring program. Fiscal year 2016 pesticide report. FDA. https://www.fda.gov/Food/FoodborneIllnessContaminants/Pesticides/ucm618247.htm 6. FDA. (2019). Pesticide residue monitoring program fiscal year 2017 pesticide report. https://www.fda.gov/food/pesticides/pesticide-residue-monitoring-2017-report-and-data 7. Ehling, S., & Reddy, T. M. (2015). Analysis of glyphosate and aminomethylphosphonic acid in nutritional ingredients and milk by derivatization with fluorenylmethyloxycarbonyl chloride and liquid chromatography-mass spectrometry. Journal of Agricultural and Food Chemistry, 63(48), 10562-10568. https://doi.org/10.1021/acs.jafc.5b04453 8. NZ Ministry for Primary Industries. (2012). Dairy national chemical contaminants programme - raw milk result summary 2011/12. Retrieved 12/15/2015 from http://www.foodsafety.govt.nz/elibrary/industry/dairy-nccp-results-summary.pdf 9. Steinborn, A., Alder, L., Michalski, B., Zomer, P., Bendig, P., Martinez, S. A., Mol, H. G., Class, T. J., & Costa Pinheiro, N. (2016). Determination of glyphosate levels in breast milk samples from Germany by LC-MS/MS and GC-MS/MS. Journal of Agricultural and Food Chemistry, 64(6), 1414-1421., https://doi.org/10.1021/acs.jafc.5b05852 10. von Soosten, D., Meyer, U., Hütther, L., Dänicke, S., Lahrssen-Wiederholt, M., Schafft, H., Spolders, M., & Breves, G. (2016). Excretion pathways and ruminal disappearance of glyphosate and its degradation product aminomethylphosphonic acid in dairy cows. Journal of

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						Dairy Science, 99(7), 5318-5324. https://doi.org/10.3168/jds.2015-10585 11. Zhao, J., Pacenka, S., Wu, J., Richards, B. K., Steenhuis, T., Simpson, K., & Hay, A. G. (2018). Detection of glyphosate residues in companion animal feeds. Environmental Pollution, 243(Pt B), 1113-1118. https://doi.org/10.1016/j.envpol.2018.08.100 The article is not reliable.
14	Ait-Bali Y. <i>et al.</i>	CA 5.6	2020	Pre- and postnatal exposure to glyphosate-based herbicide causes behavioral and cognitive impairments in adult mice: evidence of cortical ad hippocampal dysfunction.	Archives of toxicology, (2020) Vol. 94, No. 5, pp. 1703-1723	5.4.1 case b) relevant but supplementary information: In vivo study on pre and post natal effects of Roundup on swiss mice at 2 different doses only, no OECD guideline followed, no GLP status stated, no HCD provided. Oral gavage dosing of formulated product is not relevant to real life exposure scenarios. Environmental fate and metabolism for glyphosate active ingredient versus surfactants are different, and oral co-exposures to mammals at the excessively high doses tested in this case are considered irrelevant to human health risk assessment. In addition, insufficient information is provided to determine which formulation was tested and whether it is the glyphosate EU representative formulation.
15	Al-Kawaz J. M.	CA 8.2.1	2019	Effect of acute toxicity of glyphosate in gold fish <i>Carassius auratus</i> .	Annals of Tropical Medicine and Public Health, (2019) Vol. 22, No. Special Issue 5, Art No. SP173	5.4.1 case b) relevant but supplementary information: This is a dose-response laboratory study on the 96-h acute toxicity to goldfish (<i>Carassius auratus</i>) with an endpoint of 96-h LC50 = 14.55 ppm. 4 concentrations were tested. Behavioural, morphological and histopathological changes were recorded. No analytical verifications, no control results and no information on origin / any previous exposure of fishes is available. No statistical information provided. In addition, Glyphosate was not sufficiently documented. Fish used in test were collected from fish shops and they were not correctly reported. Previous exposure to pesticides cannot be excluded. The article was downgraded to Category B due to its non-reliability.
16	Berry C.	CA 5.5	2020	Glyphosate and cancer: the importance of the whole picture.	Pest management science, (2020); doi: 10.1002/ps.5834; Online ahead of print.	5.4.1 case b) relevant but supplementary information: The author is providing a general picture of the carcinogenic and genotoxic profile of Glyphosate by commenting the different studies available and the different conclusions made by IARC and Regulatory authorities. There is no evidence in the animals studies to support the IARC conclusion that glyphosate is a probable human carcinogen. The article does not provide any new information.
17	Cai W. <i>et al.</i>	CA 5.6	2020	Low-dose Roundup induces developmental toxicity in bovine preimplantation embryos in vitro.	Environmental science and pollution research international, (2020) Vol. 27, No. 14, pp. 16451-16459	5.4.1 case b) relevant but supplementary information: The effects of Roundup at 3 doses was investigated on the bovine preimplantation embryo. Direct dosing of formulated product to fertilized embryos in vitro, is not relevant to real life exposure scenarios. Environmental fate, metabolism and pharmacokinetics for glyphosate active ingredient versus surfactants are very different, and oral co-exposures to mammals at the excessively high doses tested in this case are considered irrelevant to livestock and human health risk assessments. In addition, insufficient information is provided to determine which formulation was tested and whether it is the glyphosate EU representative formulation. No OECD guideline followed, no GLP status stated, no HCD provided and no positive control.
18	Donato F. <i>et al.</i>	CA 5.9	2020	Exposure to glyphosate and risk of non-Hodgkin lymphoma and multiple myeloma: an updated meta-analysis.	La Medicina del lavoro, (2020) Vol. 111, No. 1, pp. 63-73	5.4.1 case b) relevant but supplementary information: The publication is considered not reliable because there is nothing that has been done in this (or other) meta-analysis to address recall bias, selection bias, and failure to control for confounding factors in the NHL case-control studies. The article was downgraded to Category B due to its non-reliability.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
19	Eddleston M.	CA 5.9	2020	Poisoning by pesticides.	Medicine, (2020) Vol. 48, No. 3, pp. 214-217	5.4.1 case b) relevant but supplementary information: This is a review article discussing clinical features and management of pesticide overdoses. The article comments that glyphosate has much lower toxicity in acute overdose than older pesticides and discusses the use of supportive care in these overdoses. Since this describes the management of suicidal overdoses it should not impact the risk assessment / re-registration.
20	Erhunmwunse N. O. <i>et al.</i>	CA 8.2.1	2018	Acute toxicity of glyphosate-based Isopropylamine formulation to juvenile African catfish (<i>Clarias gariepinus</i>).	Nigerian Journal of Basic and Applied Sciences (2018) Vol. 26, No. 2, pp. 97-101	5.4.1 case b) relevant but supplementary information: This is a dose-response laboratory study on the 96-h acute toxicity to African catfish (<i>Clarias gariepinus</i>) juveniles with an endpoint of 96-h LC50 = 300 mg/L. However, there is a lack of analytical verifications of the substance concentration in water. No clear origin of the fishes. Unit of the endpoint is unclear (no information whether the endpoint refers to the formulation, glyphosate or its salt). Test item cannot be identified from the article. Test design stated as being based on total residual chlorine in abstract - but it does state in the methods that OECD (1992) procedure was used, which refers to the OECD 203 acute test guideline from July 1992. Concerning fish loading - if the test employed 60 L aquariums - which cannot be confirmed, the loading is too high (approx. 18 g fish/L) compared to OECD 1992 procedure for acute fish testing of approx 1 g fish/L. The article was downgraded to Category B due to its non-reliability.
21	Faita M. R. <i>et al.</i>	CP 10.3.1.1.1	2020	Glyphosate-based herbicides and <i>Nosema</i> sp. microsporidia reduce honey bee (<i>Apis mellifera</i> L.) survivability under laboratory conditions	Journal of Apicultural Research, (2020) Vol. 59, pp. 332-342	5.4.1 case b) relevant but supplementary information: This is an acute oral toxicity test on bees performed according to the OECD 213. Collected bees in winter and spring were orally exposed to Roundup alone, <i>Nosema</i> spp. spores and a combination of both. 48-h survival after exposure to Glyphosate only (calculated as 0.08 µg a.s./bee, considering an average food consumption of 30 µL/bee) was above 95% for both winter and spring collected bees. Mortality increased when exposed to the mixture with <i>Nosema</i> spp. spores. One single glyphosate concentration and a control was tested. The study is published in a SCI peer-reviewed journal and provides relevant toxicological information on the acute oral risk to bees but no endpoints are given. There are some lacking information: no RF test conducted, no positive control was used, performance of hive was not reported. In addition, RNA profiling not used as an endpoint is EU Annex I renewal ecotox risk assessment and the outcome of the study is not very useful for the risk assessment because the tested rate is sub-lethal.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
22	Gonzalez D. <i>et al.</i>	CA 8.2.8	2019	Freshwater periphyton response to technical-grade and two commercial formulations of glyphosate.	Ecologia Austral, (2019) Vol. 29, No. 1, pp. 20-27	5.4.1 case b) relevant but supplementary information: The effects of a single glyphosate concentration (3 mg/L; 2, 5 and 9 days after application) provided by different means (pure glyphosate and 2 different formulations) on the structure of the microbial community in a freshwater microcosm were investigated. Pigments concentration, dry weight, ash-free dry weight, and algal density were determined. Effects on the control were provided and analytical verifications were made. An increase of Cyanobacteria and a decrease of algae abundances were registered in all treatments with the herbicide. The effect was greater for the formulations and lower with technical-grade glyphosate, suggesting that additives in the commercial formulations may enhance glyphosate effects. The test is not performed according to any OECD guidance, and no endpoints are given. The study is well written and published in an SCI journal. The article presents results for a microcosm type experiment where by 2 Litre treatment units were established with periphyton grown on substrates from a mesocosm. All substrates were pre-exposed to mesocosm water for 36 days, after which time substrates became colonised. Microbial communities were not assessed. Test water was prepared from centrifuged mesocosm water and then 5 pre-grown substrate boards were suspended in each of the three treatments + control. The test does not follow a recognised test design and there is some uncertainties with the methods used for identifying species and for example, how were dead diatoms determined. Despite these substrates being naturally colonised, there is no discussion over the zooplankton community that would also have been present on the substrates including / but not limited to rotifers. The influence of other factors on the periphyton assemblages on the substrates is not discussed.
23	Guo L. <i>et al.</i>	CA 8.6.	2020	Effects of glyphosate and paraquat on root morphology and aboveground growth of <i>Prunus persica</i> seedlings.	Ying yong sheng tai xue bao = The journal of applied ecology, (2020) Vol. 31, No. 2, pp. 524-532	5.4.1 case b) relevant but supplementary information: The aim of the study is to examine the effects of two herbicides (glyphosate and paraquat) on vegetative growth, root structure, root-tip cell mitosis and photosynthesis in peach (<i>Prunus persica</i>) seedlings. The growth of both shoots and roots of the <i>P. persica</i> seedlings was significantly inhibited by glyphosate applied at 2.5 g/L with a plant height decrease of 31.5% compared to control. Total root length, root surface area, root volume and the number of root tips also decreased compared to the control by 39.5%, 39.5%, 49.8% and 44.6%, respectively. The test does not follow any of the recommended OECD protocols for testing terrestrial plants at the EU level. Furthermore, the test substance is not clearly identified - it is unclear whether it is a product or a technical substance. However, the test item used cannot be related to the EU representative formulation as it was stated that the product used was a 300 g/L formulation - but no other formulation details are presented. Exposure concentrations in the spray were not confirmed. No endpoints nor apical measurements presented that can be related to an EU level risk assessment for renewal purposes. The article is not reliable.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
24	Jeon S. <i>et al.</i>	CA 5.5	2020	Glyphosate influences cell proliferation in vitro.	Frontiers in Life Science, (2020) Vol. 13, No. 1, pp. 54-65	5.4.1 case b) relevant but supplementary information: Glyphosate was tested in vitro at a range of doses to investigate its effects on cell growth and proliferation in human cells. In conclusion, Glyphosate increases the rate of cell growth in human embryonic kidney 293 (HEK293) cells. Glyphosate promotes cell proliferation by activating gene expression of cell cycle regulators in humans in vitro. Useful information but not altering risk assessment and data requirement and difficult to be used because no HCD. No positive control were used, no statistics methods were described. Furthermore, no OECD guideline followed, no GLP status stated. The article is not reliable.
25	Kharat T. L. <i>et al.</i>	CA 8.2.1	2016	Effect of glyphosate roundup on oxygen consumption in freshwater fish <i>Rasbora daniconius</i>	EcSCAN, (2016) Vol. 9, No., Spec.Iss., pp. 567-571	5.4.1 case b) relevant but supplementary information: This is a dose-response laboratory study on the 96-h acute toxicity to a local fish species (<i>Rasbora daniconius</i>) with an endpoint of 96-h LC50 = 5.66 mg/L. 7 concentrations were tested. Oxygen consumption was measured in a separate test when fishes are exposed to control, lethal and sub-thel concentration of the formulation in water. Behavioural and morphological observations were also made. There is a lack of analytical verifications. No statistical analysis. Glyphosate was not sufficiently documented, No information given about the control. Other relevant methodological information not provided. Wild-caught fish used in test, previous exposure to pesticides cannot be excluded. No test guideline stated. Fitness of test population unknown. Exposure test conditions, test media preparation, environmental controls - all were not defined / no water quality data reported in the results. Fish weights reported, but as test design not presented, the fish loading and influence on outcome of results cannot be determined. Uncertainty in the results based on errors in the results table i.e. 70% mortality stated to have occurred at the 4.6 mg/L rate, when the text and the report table suggest only 30% mortality. The article was downgraded to Category B due to its non-reliability.
26	Levine S. L. <i>et al.</i>	CA 5.8.2	2020	Review and Analysis of the Potential for Glyphosate to Interact with the Estrogen, Androgen, and Thyroid Pathways.	Pest management science, (2020), DOI 10.1002/ps.5983	5.4.1 case b) relevant but supplementary information: A systematic literature review was performed including US EPA EDSP Tier 1 battery assessment, guideline regulatory studies, ESDP including 5 in vitro and 6 in vivo assays to evaluate the EAT pathways. From the available literature, it was concluded that glyphosate does not have an endocrine disrupting potential through estrogenic, androgenic or steroidogenic activity. The review includes relevant literature which has been used for the ED assessment during the current submission process. It can therefore serve as supporting information, however as a review it does not provide new primary data or alter the risk assessment. Therefore, the review has been classified as a relevant but supplementary only (EFSA 2092 GD Point 5.4.1 category B).

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
27	Lu T. <i>et al.</i>	CA 8.2.8	2020	Understanding the influence of glyphosate on the structure and function of freshwater microbial community in a microcosm.	Environmental pollution, (2020) Vol. 260, Art. No. 114012	5.4.1 case b) relevant but supplementary information: The effects of single glyphosate concentration (2.5 mg/L, 15 days) on the structure and function of microbial communities in a freshwater microcosm were investigated. This treatment did not significantly alter the physical and chemical condition of the microcosm or the composition of the main species in the community, but the transcriptions of some cyanobacteria were significantly influenced. Under glyphosate stress, the microbial community structure did not change much, but the microbes' function varied a lot. The test is not preformed according to any OECD guidance, but the outcomes on the aquatic microbial community (algae, cyanobacteria) can be relevant for the risk assessment but no endpoints are given. There is a lack of analytical verifications of the product concentration on the artificial medium and that the samples are from a lake and therefore, previous exposure to pesticides cannot be excluded.
28	Nagai T.	CA 8.2.6	2019	Sensitivity differences among seven algal species to 12 herbicides with various modes of action.	Journal of Pesticide Science (2019) Vol. 44, No. 4, pp. 225-232	5.4.1 case b) relevant but supplementary information: For glyphosate no data presented that could impact the endpoints used in the risk assessment as they have been achieved using a method that is not recognised at the EU level. Reference to available data is considered a secondary source and therefore not relevant to EU renewal. Validity criteria not reported. ErC50 were calculated at 96h instead of at 72h. The initial green algae biomass concentration was not reported. The test substance was not clearly identified (purity unclear). Control results are missing.
29	Neto de Silva K. <i>et al.</i>	CA 5.7	2020	Glyphosate-based herbicide impairs energy metabolism and increases autophagy in C6 astrogloma cell line.	Journal of toxicology and environmental health. Part A, (2020) Vol. 83, No. 4, pp. 153-167	5.4.1 case b) relevant but supplementary information: In vitro study on the effects of micromolar concentrations of a glyphosate-based herbicide on energy metabolism and mitochondrial mass in astrogloma cell line exposed for 24 h to the herbicide at 3 concentrations below 160 µM. However, insufficient information provided to identify which formulation was tested. No positive control was used, no statistics methods were described, no OECD guideline followed, no GLP status stated, no HCD provided. In addition, astrocytes in real life are not co-exposed to the combination of glyphosate + surfactant formulants, based on their very different environmental fates and pharmaco-kinetics.
30	Parks C. G. <i>et al.</i>	CA 5.8.2	2019	Lifetime pesticide use and antinuclear antibodies in male farmers from the agricultural health study	Frontiers in Immunology (2019) Vol. 10, Art. No. 1476	5.4.1 case b) relevant but supplementary information: The development of systemic autoimmunity in response to pesticide exposure was investigated in a retrospective study farmers. Serum antinuclear autoantibodies were measured by immunofluorescence on Hep-2 cells in 668 male farmers. The effect of lifetime use of 46 pesticides (glyphosate among them) on ANA were investigated. The results for glyphosate use demonstrate no increase the risk of farmers developing systemic autoimmunity. This information is useful in a weight of evidence assessment for the measured endpoint, which, however, is not a critical endpoint identified for human health risk assessment of glyphosate.
31	Rajput R. <i>et al.</i>	CA 5.9	2019	Haemodialysis as an imperative treating modality in severe glyphosate-surfactant poisoning.	Journal, Indian Academy of Clinical Medicine, (2019) Vol. 20, No. 3-4, pp. 224-226	5.4.1 case b) relevant but supplementary information: This is a case report of a patient who developed hyperkalaemia, renal failure and pulmonary edema after a suicidal ingestion of formulated glyphosate. These clinical features are common with large ingestions. Hemodialysis is standard of care in cases such as these. This report raises no new clinical features regarding this type of overdose and should not impact risk assessment / re-registration.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
32	Ren Y. <i>et al.</i>	CA 5.9	2020	Cases report of gastrointestinal hemorrhage caused by glyphosate herbicides.	Acta Medica Mediterranea, (2020) Vol. 36, No. 3, pp. 1611-1614	5.4.1 case b) relevant but supplementary information: This article describes two patients with GI hemorrhage after formulated glyphosate ingestion. According to the history, the first patient drank excessive amounts of ethanol for a long time, which in and of itself can contribute to GI ulceration and bleeding. He also ingested triazolone. This patient's course appears to be atypical as the patient appears to have been stable on admission, was in the hospital for weeks, underwent multiple endoscopic procedures for 2 weeks after ingestion and later developed significant GI bleeding necessitating a gastrectomy. In formulated glyphosate overdoses, corrosive injury to the GI tract occurs early due to the surfactant. The second patient in this report also presented with corrosive injury to the GI tract which is not unexpected. Since this paper describes suicidal ingestions it should not impact the risk assessment / re-registration.
33	Sanudi F. <i>et al.</i>	CA 8.2.1	2018	Lethal toxicity of glyphosate herbicide on koi carp, cyprinus carpio (Linnaeus, 1758) fingerlings.	Toxicology International, (2018) Vol. 25, No. 2, pp. 139-141	5.4.1 case b) relevant but supplementary information: Bioassay experiments were conducted to determine the lethal toxicity of glyphosate herbicide on Koi carp, Cyprinus carpio fingerlings. The fishes were exposed to different concentrations of glyphosate and mortality was recorded after every 6 h for a period of 96 h. The 96 h LC50 concentration for glyphosate on Koi carp fingerlings was found to be 33.2 mg/L. There is no test item information, nor biological observation data presented to corroborate the findings, in addition no chemical analysis and therefore exposure cannot be confirmed. The article was downgraded to Category B due to its non-reliability.
34	Selvarani A. J. <i>et al.</i>	CA 8.2.1	2019	Acute toxicity of glyphosate herbicide on Nile tilapia (Oreochromis niloticus)	International Journal of Current Microbiology and Applied Sciences, (2019) Vol. 8, No. 10, pp. 61-68	5.4.1 case b) relevant but supplementary information: This test was performed in a static renewal regime with Nile tilapia (Oreochromis niloticus) exposed to 5 different concentrations of glyphosate (15.33, 30.67, 61.34, 122.68 and 245.36 mg/L) for 96 hours. Mortality was recorded but also the gill, liver and kidney tissues were dissected out. Lack of analytical verifications of the substance concentration in water but exposure medium was changed every 24 h to maintain the desired concentrations. The test item is not identified. There is no chemical analysis. Water quality measurements have / appear to have only been done at the test start. A table is presented, but whether this is starting or duration derived values is unknown. Fish loading during the 96 hr test is excessive. 10 x 100 g fish in 50 litres = 20 g fish / litre. US EPA requires 0.8 g fish/L; OECD requires 1.0 g/L. This study would be considered invalid in the EU and the US for these reasons. The article was downgraded to Category B due to its non-reliability.
35	Solis-Gonzalez G. <i>et al.</i>	CA 8.2.4.2; CA 8.2.6.2	2019	Acute toxicity of N-(phosphonomethyl) glycine herbicide on planktonic microorganisms Artemia franciscana and Microcystis aeruginosa.	TIP Revista Especializada en Ciencias Químico-Biológicas, (2019) Vol. 22, pp. 1-8	5.4.1 case b) relevant but supplementary information: The aim of this research was to evaluate the median lethal concentration at 24h in Artemia franciscana, as well as the median population inhibitory concentration and the coefficient of form in the cyanobacterium Microcystis aeruginosa in aquatic ecosystems. The calculated endpoint for A. franciscana was 24-h LC50 = 0.31 mg/L and for M. aeruginosa was 72-h ErC50 = 53.95 mg/L. Lack of analytical verifications during the test. Tested concentrations and dissolved oxygen (for invertebrate species) was not reported. For the additional aquatic invertebrate species, mortality was calculated at 24h (instead of at 48h). As raw data are not provided, it is not possible to check the validity criteria of the tests. The endpoints and the performance of the controls cannot be validated. The article was downgraded to Category B due to its non-reliability.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
36	Soukup S. T. <i>et al.</i>	CA 5.9	2020	Glyphosate and AMPA levels in human urine samples and their correlation with food consumption: results of the cross-sectional KarMeN study in Germany.	Archives of toxicology, (2020) Vol. 94, No. 5, pp. 1575-1584	5.4.1 case b) relevant but supplementary information: The authors calculated the intake of glyphosate and AMPA based on urinary concentrations and checked this value against the EU acceptable daily intake (ADI) value for glyphosate. The exposure to glyphosate and AMPA was found to be very low. Quantifiable levels of glyphosate and/or AMPA was detected in 8.3% (25 out of 301) of the participants with the highest reported value (0.63 µg/kg BW) being 0.13% of the ADI. 24-hr urine samples were collected from 301 adults for analysis of glyphosate. The study subjects were recruited to be healthy and not taking medications. The glyphosate exposures as a percent of the ADI were calculated. However, unlike previous studies, this calculation was not derived using assumptions for body weight or volume of urine. Rather, ADIs were calculated for each study subject using their own body weight and 24-hr urine excretion. Samples were analyzed using an LC-MS/MS that was modified by the procedure of Jensen <i>et al.</i> (1), and 66.5% had neither no detectable glyphosate nor AMPA in urine. Glyphosate and/or AMPA was quantifiable detected in 8.3% of participants with a maximum glyphosate exposure of 0.63 µg/kg BW, which was 0.13% of the ADI. The maximum intake of AMPA + glyphosate corresponded to 0.16% of the ADI. This study also used 24-hr dietary recalls and did rank-order correlations to estimate food sources of glyphosate and AMPA. This was done based solely of the amount of food and not glyphosate content of the food. Nevertheless, they found that consumption of pulses and mushrooms were correlated with glyphosate and AMPA in urine, respectively. Absorbed glyphosate is not metabolized in the body suggesting that ingestion of AMPA per se, not glyphosate, was responsible for urinary AMPA. As a result of their study, the authors concluded that “based on the current risk assessment of glyphosate by EFSA, such exposure levels are not expected to pose any risk to human health. The detected associations with consuming certain foods are in line with reports on glyphosate and AMPA residues in food.” References 1. Jensen, P. K., Wujcik, C. E., McGuire, M. K., and McGuire, M. A. (2016) Validation of reliable and selective methods for direct determination of glyphosate and aminomethylphosphonic acid in milk and urine using LC-MS/MS. <i>Journal of Environmental Science and Health. Part. B, Pesticides, Food Contaminants, and Agricultural Wastes</i> 51, 254-259

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
37	Tang Q. <i>et al.</i>	CA 5.3	2020	Glyphosate exposure induces inflammatory responses in the small intestine and alters gut microbial composition in rats.	Environmental pollution, (2020) Vol. 261, Art. No. 114129	5.4.1 case b) relevant but supplementary information: The rats were gavaged with 0, 5, 50, and 500 mg/kg of body weight glyphosate for 35 continuous days. The different segments of the small intestine were sampled to measure indicators of oxidative stress, ion concentrations and inflammatory responses, and fresh feces were collected for microbiota analysis. The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. No GLP status stated, no HCD provided and no purity of glyphosate stated. Fundamental parameters to understand animal health and toxicology endpoints are not reported. Therefore the context of the study results can not be interpreted with any degree of certainty. The article is not reliable.
38	Uengchuen K. <i>et al.</i>	CA 5.9	2020	Health risk assessment on the glyphosate exposure of knapsack sprayers.	Indian Journal of Public Health Research and Development, (2020) Vol. 11, No. 3, pp. 2088-2093	5.4.1 case b) relevant but supplementary information: This article describes an assessment tool designed by the researchers to evaluate level of exposure based on PPE use, self-reported symptoms 6 months after use and frequency of use. They found that most farmers used PPE and had minimal symptoms such as burning eyes which may be due to the surfactant in formulations. There were no severe symptoms and no description of long-term outcomes. This descriptive article describes self-reported non-specific symptoms (nausea, headache, rash, burning eyes) in glyphosate users and should not affect the risk assessment / re-registration.
39	Yang F. <i>et al.</i>	CA 5.9	2020	Acute obstructive fibrinous laryngotracheobronchitis induced by severe glyphosate surfactant intoxication: A case report.	World journal of emergency medicine, (2020) Vol. 11, No. 2, pp. 125-126	5.4.1 case b) relevant but supplementary information: This is a case report describing a patient who developed fibrinous tracheobronchitis after a suicide attempt with formulated glyphosate. Since the surfactant can cause corrosive injury and the patient had evidence of aspiration, this would be a possible side effect. Since this reflects a suicidal ingestion, it should not impact the risk assessment / re-registration.
40	Ye J. <i>et al.</i>	CA 8.2.6	2019	The Growth, Apoptosis and Oxidative Stress in <i>Microcystis viridis</i> Exposed to Glyphosate	Bulletin of environmental contamination and toxicology (2019) Vol. 103, No. 4, pp. 585-589	5.4.1 case b) relevant but supplementary information: Provides information on the effects of glyphosate on the growth of <i>Microcystis viridis</i> at 4 different concentrations every 24 h for 10 days but no endpoints are given. The algal growth inhibition test was conducted according to the OECD guideline 201-Freshwater Alga and Cyanobacteria (2011). However, as no raw data and only results in figures were presented, it is not possible to check its validity criteria. No reference substance has been tested. Analytical verifications were performed but it is not clear in the study whether they are only made at the test start or also during the study. Analytically, over a 3 day period, glyphosate is very stable under illuminated conditions. Under 240 hours exposure, it is highly unlikely that the authors could have achieved such high recoveries, hence the thought would be that the measured values presented were initial measured concentrations. The duration of the study is longer than recommended (10 days instead of 3), but growth rate is recorded after 72 h. There is not sufficient information presented to corroborate the findings.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
41	Zhang F. <i>et al.</i>	CA 5.9	2020	Concentration Distribution and Analysis of Urinary Glyphosate and Its Metabolites in Occupationally Exposed Workers in Eastern China.	International journal of environmental research and public health, (2020) Vol. 17, No. 8, Art. No. 2943	5.4.1 case b) relevant but supplementary information: This study followed workers who were occupationally exposed to glyphosate in a manufacturing facility. They measured ambient air concentrations and then measured urinary concentrations of glyphosate and AMPA and found that the detection rates of glyphosate (>0.020mg/L) and AMPA (>0.010mg/L) were 86.6% (116/134) and 81.3% (109/134), respectively. The median values were 0.292 mg/L and 0.068 mg/L for urinary glyphosate and AMPA. There was variability in exposure based on where the worker was physically in the plant. This study was looking at biomarkers for exposure and makes no health claims regarding these exposures.
42	Zhang Y. <i>et al.</i>	CA 8.2.6.2	2016	Inhibitory activity of 26 herbicides against the growth of <i>Scenedesmus obliquus</i>	Anhui Nongye Kexue, (2016) Vol. 44, No. 23, pp. 132-133	5.4.1 case b) relevant but supplementary information: The aim of this research was to determine the inhibitory activities of 26 herbicides against the growth of the microalgae <i>Scenedesmus obliquus</i> using an absorption spectrophotometry method. Among the 26 herbicides, glyphosate was categorized as low toxic (72 h EyC50 = 73.9 mg/L) and glyphosate-isopropylammonium (72 h EyC50 = 2.21 mg/L) as moderately toxic. Methodology of the test is poorly described and then only final conclusions are reported. The article was published in non-peer reviewed journal. Lack of analytical verifications during the test. pH not reported. Test substance is not clearly identified and tested rates are not reported. The response variable was given as yield, which may be needed to fulfil specific regulatory requirements in some EU countries. However, the data basis of the endpoint is unclear as it was also stated that inhibition concentration based on biomass was calculated. The inhibition rate was calculated using the absorption of the tested solutions and the conversion factor (cell number vs. absorption) is not known. The strain/ origin of the tested organisms is not sufficiently reported. As raw data are not provided, it is not possible to check the validity criteria of the tests. The endpoints and the performance of the controls cannot be validated. The article was downgraded to Category B due to its non-reliability.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
43	Zoller O. <i>et al.</i>	CA 5.1	2020	Urine glyphosate level as a quantitative biomarker of oral exposure.	International journal of hygiene and environmental health, (2020) Vol. 228, Art. No.113526	5.4.1 case b) relevant but supplementary information: This was a study with human volunteers. The trial was designed to ensure comparable exposure levels to glyphosate among participants who consumed diets with low content of glyphosate residue during the 4-day trial, except for the single meal with targeted amount of glyphosate and AMPA corresponding to an intake of 196.8 µg of glyphosate and 1.67 µg of AMPA. Only urine was collected and analysed for glyphosate and AMPA. Blood and faeces were not collected and/or analysed. This goal of the study was to estimate oral glyphosate intake using urinary biomonitoring data. However, the authors recognised that the determination of blood concentrations is necessary to improve human bioavailability data. Comparison of urinary data in humans in this study with those measured in the rat studies suggest that the systemic availability is much lower in humans than in rats and could be about 20-fold lower. However, in the absence of a mass balance, and a very low recovery of glyphosate and AMPA, the data should be considered unreliable. Given the knowledge that orally dosed glyphosate is mostly excreted via the faeces, an appropriate study design to address mass balance could easily have been implemented to make this a robust and informative investigation. Low recovery rates of glyphosate and AMPA suggest a very large capacity for errors. The study design is inadequate to confirm reliability of the findings. The lack of mass balance of analytes, despite common knowledge that orally dosed glyphosate is mostly excreted in faeces, is disappointing, given the ease with which a mass balance could have been assessed. The article was downgraded to Category B due to its non-reliability.

Table 36: Articles of unclear relevance (category C) after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Table 37: Articles of unclear relevance (category C) after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point No.)	Year	Title	Source	Justification
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Table 38: Articles excluded after detailed assessment (i.e. not relevant): sorted by technical section (and by author)

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
44	Ecotoxicology	Almeida P. R. <i>et al.</i>	2019	Acute toxicity (CL50) and behavioral and morphological effects of a commercial formulation with glyphosate active ingredient in tadpoles of <i>Physalaemus cuvieri</i> (Anura, Leptodactylidae) and <i>Rhinella icterica</i> (Anura, Bufonidae).	Engenharia Sanitaria e Ambiental (2019) Vol. 24, No. 6, pp. 1115-1125	The publication is not relevant as in the conclusion, the authors indicated that the product used contains POEA. POEA is not permitted for use in formulated herbicidal products in the EU. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the risk assessment for EU renewal. In addition, there is a lack of analytical verifications of the substance concentration in water. Unit of the endpoint is unclear and no information provided whether the endpoint refers to the formulation, glyphosate or its salt.
45	Ecotoxicology	Carpenter D. J. <i>et al.</i>	2020	Effects of Herbicides on Flowering.	Environmental toxicology and chemistry, (2020) Vol. 39, No. 6, pp. 1244-1256	Although Glyphos and Glyphogan are both glyphosate 360 SL formulations, they do contain different surfactant systems. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the risk assessment for EU renewal. The surfactant system used in glyphos and glyphogan are respectively - tallow ethoxylate based or oxyethoxylate based, whereas the surfactant used in MON 52276 is ammonium based.
46	Ecotoxicology	Fathi M. A. <i>et al.</i>	2020	Disruption of cytochrome P450 enzymes in the liver and small intestine in chicken embryos in ovo exposed to glyphosate.	Environmental science and pollution research international, (2020) Vol. 27, No. 14, pp. 16865-16875	The publication investigates the effects on antioxidant enzyme activity, histomorphology on the liver and small intestine. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment.
47	Ecotoxicology	Kalai K. <i>et al.</i>	2019	Effect of induced chronic glyphosate toxicity in liver and kidneys of kuroiler birds.	Indian Journal of Veterinary Pathology (2019) Vol. 43, No. 3, pp. 211-216	The publication investigates biochemical, histopathological and cellular ultrastructural parameters of blood and liver tissues and only findings on cellular/molecular level are reported. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment.
48	Ecotoxicology	Meshkini S. <i>et al.</i>	2019	acute and chronic effect of Roundup herbicide on histopathology and enzymatic antioxidant system of <i>Oncorhynchus mykiss</i>	International journal of environmental science and technology (2019) Vol. 16, No. 11, pp. 6847-6856	The principal reason for this paper not being relevant is that EPA registration No. 524-529 is a concentrate formulation (50.2%) which contains POEA surfactant. POEA is not permitted for use in formulated herbicidal products in the EU. The article is therefore not relevant to an EU regulatory risk assessment / glyphosate EU renewal.
49	Ecotoxicology	Mestre A. P. <i>et al.</i>	2020	Effects of glyphosate, cypermethrin, and chlorpyrifos on hematological parameters of the tegu lizard (<i>Salvator merianae</i>) in different embryo stages.	Chemosphere, (2020) Vol. 252, Art. No. 126433	The publication investigates haematological parameters on reptiles' embryos and only findings at the cellular/molecular level are reported. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
50	Ecotoxicology	Mottier A. <i>et al.</i>	2020	In vitro effects of glyphosate-based herbicides and related adjuvants on primary culture of hemocytes from <i>Haliotis tuberculata</i> .	Fish & shellfish immunology, (2020) Vol. 100, pp. 1-8	The publication investigates in vitro effects on hemocytes and only findings on cellular/molecular level are reported. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment.
51	Ecotoxicology	Odetti L. M. <i>et al.</i>	2020	Genotoxicity and oxidative stress in <i>Caiman latirostris</i> hatchlings exposed to pesticide formulations and their mixtures during incubation period.	Ecotoxicology and environmental safety, (2020) Vol. 193, Art. No. 110312	In vivo study on the effects of Glyphosate-based herbicides on eggs of <i>Caiman latirostris</i> . The formulation tested (GLY Roundup® Full II (66.2%), water-soluble herbicide (12000 mg/L), containing potassium salt) is not the EU representative formulation for the glyphosate EU renewal and therefore not relevant for the EU risk assessment.
52	Ecotoxicology	Owagboriaye F. <i>et al.</i>	2020	Biochemical response and Vermiremediation assessment of three earthworm species (<i>Alma millsoni</i> , <i>Eudrilus eugeniae</i> and <i>Libyodrilus violaceus</i>) in soil contaminated with a Glyphosate-based herbicide	Ecological indicators (2020) Vol. 108, Art. No. 105678	This study aimed to evaluate the biochemical response and vermiremediation potential of three indigenous earthworm species in glyphosate treated soils. Test design and achieved results are not relateable to an EU level regulatory risk assessment for Annex I renewal.
53	Ecotoxicology	Pontes J. P. <i>et al.</i>	2020	A glyphosate-based herbicide in a free-choice test on parasitism, emergence, and female-biased sex ratio of 10 <i>Trichogrammatidae</i> .	Journal of Plant Diseases and Protection, (2020) Vol. 127, No. 1, pp. 73-79	Roundup Original DI® (a mixture of IPA and diammonium salts) is not the EU representative formulation, therefore the article is not relevant for the glyphosate EU renewal.
54	Ecotoxicology	Ruuskanen S. <i>et al.</i>	2020	Effects of parental exposure to glyphosate-based herbicides on embryonic development and oxidative status: a long-term experiment in a bird model.	Scientific reports, (2020) Vol. 10, No. 1, pp. 6349	Roundup Flex is a potassium salt based formulation and has a different surfactant system compared to the EU representative formulation. Therefore, this publication is not relevant for the EU glyphosate renewal.
55	Ecotoxicology	Shitha C. <i>et al.</i>	2017	Impact of glyphosate and chlorpyrifos on chemical and biological properties of a lateritic soil	Pesticide Research Journal (2017) Vol. 29, pp. 68-74	Roundup SL is commercialized in India and it is not the EU representative formulation thus this article is not relevant for the EU glyphosate renewal. In addition, the study design, the test system and the species tested are not relevant for the European regulatory purposes. The tested soil (even for lab tests) is a local one in India. The tested species (<i>Perionyx excavatus</i> in the case of earthworms) are also native. In addition, the field experiments are not dealing with EU representative conditions. No experiment was performed according to any of the EU recommended testing guidances/designs. No useful endpoint can be derived.
56	Ecotoxicology	Vazquez D. E. <i>et al.</i>	2020	Chronic exposure to glyphosate induces transcriptional changes in honey bee larva: A toxicogenomic study.	Environmental pollution, (2020) Vol. 261, Art. No. 114148	The publication investigates the effects of chronic exposure of a single concentration of pure glyphosate on honey bee larvae regarding their gene expression profile using a transcriptomic approach. However, the study design and the test system are not relevant for the European regulatory purposes. The experiment was not performed according to any of the EU recommended testing guidances/designs. No useful endpoint can be derived. No positive control was tested.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
57	Ecotoxicology	Villar S. <i>et al.</i>	2019	Measurement of genetic damage in <i>Apis mellifera</i> caused by agrochemicals using comet assay.	Current Topics in Toxicology, (2019) Vol. 15, pp. 133-139	The publication investigates the effects of acute exposure of a glyphosate formulation on adult honey bee DNA. Only findings at the cellular/molecular level are reported. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment. The experiment was not performed according to any of the EU recommended testing guidances/designs.
58	Toxicology and metabolism	Alarcon R. <i>et al.</i>	2020	Neonatal exposure to a glyphosate-based herbicide alters the uterine differentiation of prepubertal ewe lambs.	Environmental pollution, (2020) Vol. 265, No. Pt B, Art. No. 114874	Roundup FULL II® (Argos SRL, Santa Fe, Argentina), a liquid water-soluble formulation containing 54 g of glyphosate in 100 mL of commercial formulation is not the EU representative formulation for the EU glyphosate renewal and therefore not relevant to the EU glyphosate renewal. In addition, direct injection into the neck of pregnant ewes with formulated product containing surfactant is not relevant to real life exposure scenarios. Environmental fate, metabolism and pharmacokinetics for glyphosate active ingredient versus surfactants are very different. Given the direct systemic exposure, these data are considered irrelevant to livestock and human health risk assessments.
59	Toxicology and metabolism	Barbasz A. <i>et al.</i>	2020	Toxicity of pesticides toward human immune cells U-937 and HL-60.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2020) pp. 1-7; Doi: 10.1080/03601234.2020.1777059	Human histiocytic lymphoma cell line (U-937) and human promyelocytic cell line (HL-60) were exposed to glyphosate at a concentrations from 1.3 mM to 21.3 mM. Although the data are accurate, the doses selected are not physiologically relevant to human health risk assessment. Effects are noted well in excess of physiologically relevant doses and therefore, are not applicable to the risk assessment.
60	Toxicology and metabolism	Calvo-Trujillo M. <i>et al.</i>	2019	Exposure to pesticides as a risk factor for Parkinson's disease: A case-control study in San Juan Nepomuceno Town (Bolívar).	Revista de Toxicologia, (2019) Vol. 36, No. 2, pp. 142-147	This publication describes an association between pesticide exposure and Parkinson's disease. The only context in which glyphosate is mentioned is to say that it is a widely used herbicide. There is no claim that glyphosate exposure is associated with PD and therefore this article is not relevant for the glyphosate EU renewal.
61	Toxicology and metabolism	Coppola L. <i>et al.</i>	2020	Integrated approach to evaluate the association between exposure to pesticides and idiopathic premature thelarche in girls: The PEACH project.	International Journal of Molecular Sciences, (2020) Vol. 21, No. 9, Art. No. 3282	No results are provided in the article, only a section with expected results is included. The article does not provide any new information that can be used in the risk assessment.
62	Toxicology and metabolism	de Castilhos Ghisi N. <i>et al.</i>	2020	Glyphosate and its toxicology: A scientometric review.	The Science of the total environment, (2020) Vol. 733, Art. No 139359	This scientometric review does not focus on toxicological endpoints following a glyphosate exposure of any kind. No relevant information or conclusion on the toxicity of glyphosate for the risk assessment can be drawn.
63	Toxicology and metabolism	Devault D. A. <i>et al.</i>	2020	Wastewater-based epidemiology approach to assess population exposure to pesticides: a review of a pesticide pharmacokinetic dataset	Environmental science and pollution research international (2020) Vol. 27, No. 5, pp. 4695-4702	This publication is a literature review and does not contain any toxicological endpoints following the exposure to glyphosate. It rather aims to identify from literature if it is possible to use wastewater based epidemiology to assess human exposure to different pesticides. The article cannot contribute to the risk assessment of glyphosate.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
64	Toxicology and metabolism	Djaber N. <i>et al.</i>	2020	Roundup-induced biochemical and histopathological changes in the liver and kidney of rats: the ameliorative effects of Linum usitatissimum oil.	Acta Biochimica Polonica, (2020) Vol. 67, No. 1, pp. 53-64	Roundup TURBO (450 g/L) is not the EU representative formulation and therefore not relevant to the EU glyphosate renewal. The Roundup dosing rationale in the study appeared to be to intentionally elicit toxic effects and endorse the administration of Linum usitatissimum oil (LuO) to counter toxicity to liver/kidney tissue (perhaps preventive?). With this approach the dosing regime is a major flaw in the study design as only one dose level was selected and it is unclear what effects may have been seen, if any, at more relevant exposure levels.
65	Toxicology and metabolism	Gallegos C. E. <i>et al.</i>	2020	Intranasal glyphosate-based herbicide administration alters the redox balance and the cholinergic system in the mouse brain.	Neurotoxicology, (2020) Vol. 77, pp. 205-215	Glifloglex®, marketed in Argentina, is not the EU representative formulation and therefore not relevant to the EU glyphosate renewal.
66	Toxicology and metabolism	Gomez A. L. <i>et al.</i>	2020	Exposure to a Glyphosate-based Herbicide Alters the Expression of Key Regulators of Mammary Gland Development on Pre-pubertal Male Rats.	Toxicology, (2020) Vol. 439, Art No. 152477	In vivo study on pre and post natal effects of Glyphosate-based herbicide administered to Wistar female rat at 3.5 and 350 mg/kg/day (8-10 females rat/group). Glyphosate-based herbicide (Glyphosate 66.2% - potassium salt, acid equivalent 54%) was tested, which is not the EU representative formulation and thus article is not relevant for the EU glyphosate renewal.
67	Toxicology and metabolism	Hamdaoui L. <i>et al.</i>	2020	Sub-chronic exposure to Kalach 360 SL, Glyphosate-based Herbicide, induced bone rarefaction in female Wistar rats.	Toxicology, (2020) Vol. 436, Art. No. 152412	In vivo study on effects of Kalach 360 SL on ED parameters on wistar female rat at 2 different doses. Kalach 360 SL is not the EU representative formulation and thus article is not relevant for the EU glyphosate renewal. Kalach 360 SL contains POEA (polyethoxylated tallow amine) which is not permitted for use in formulated herbicidal products in the EU.
68	Toxicology and metabolism	Kass L. <i>et al.</i>	2020	Relationship between agrochemical compounds and mammary gland development and breast cancer.	Molecular and cellular endocrinology, (2020) Vol. 508, Art. No. 110789	This very limited literature review focuses on the endocrine disrupting potential of different agrochemicals with glyphosate among them. Some relevant in vitro, in vivo and epidemiological studies assessing the effects of glyphosate on several factors related to endocrine function, are summarised. The cited monitoring studies highlight that glyphosate-based herbicides were detected in human samples (milk, urine, maternal blood), but contrary scientific papers are not cited. In vitro studies performed with relevant cell lines are presented to be affected by glyphosate. Further, in vivo studies investigating developmental parameters describe effects allegedly induced by glyphosate and are suggested to result from altered endocrine function. The literature review does not provide any new data. It only summarises existing data and states that it is not possible to distinguish if the effects are caused by the active substance glyphosate or additives in the formulation such as surfactants. Due to this statement and no new data the literature review has been classified as not relevant.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
69	Toxicology and metabolism	McCully K. S.	2020	Environmental Pollution, Oxidative Stress and Thioretinaco Ozonide: Effects of Glyphosate, Fluoride and Electromagnetic Fields on Mitochondrial Dysfunction in Carcinogenesis, Atherogenesis and Aging.	Annals of clinical and laboratory science, (2020) Vol. 50, No. 3, pp. 408-411	No experimental set up is used to investigate glyphosate toxicity. Therefore, it cannot provide new information. A very limited toxicological evaluation of glyphosate fluoride and electromagnetic fields is described based on selected literature, very specific endpoints and not specifying the compound (glyphosate as active ingredient or formulation) which was used in the studies that are cited. This review is considered not relevant.
70	Toxicology and metabolism	Mendler A. <i>et al.</i>	2020	Mucosal-associated invariant T-Cell (MAIT) activation is altered by chlorpyrifos- and glyphosate-treated commensal gut bacteria.	Journal of Immunotoxicology, (2020) Vol. 17, No. 1, pp. 10-20	Gut microbiome (Escherichiacoli, Bifidobacterium adolescentis and Lactobacillus reuteri) were exposed to different concentrations of a glyphosate formulation. Peripheral blood mononuclear cells (PBMCs) obtained from human volunteers were then stimulated with either pesticide-treated or non-treated bacteria (B. adolescentis or L. reuteri). Untreated E. coli were added later. MAIT cells were identified with flow cytometry and riboflavin and folate contents were measured using LC-MS/MS and electroluminescence immunoassay, respectively. A proteomic analysis was performed in E. coli. In conclusion, glyphosate might alter bacterial metabolism potentially leading altered inflammatory immune responses. A formulation of glyphosate is tested in vitro. The article is excluded as in vitro testing of glyphosate formulations produce surfactant induced cytotoxicity that is not representative for glyphosate or relevant of human in vivo exposure scenarios. Further, PBMCs instead of MAIT cells derived from gut were used.
71	Toxicology and metabolism	Namratha M. L. <i>et al.</i>	2019	Effect of glyphosate (GLP) induced toxicity on body weights and gross pathology: ameliorative effect of ascorbic acid (AA) in wistar rats	International Journal of Current Microbiology and Applied Sciences, (2019) Vol. 8, No. 10, pp. 1486-1493	Roundup® (41%) procured in India is not the EU representative formulation (the composition and surfactant system differs from the EU representative formulation), therefore the article is not relevant for the EU glyphosate renewal.
72	Toxicology and metabolism	Ongono J. S. <i>et al.</i>	2020	Pesticides used in Europe and autism spectrum disorder risk: can novel exposure hypotheses be formulated beyond organophosphates, organochlorines, pyrethroids and carbamates? - A systematic review.	Environmental research, (2020) Vol. 187, pp. 109646	Review on potential role of neuro- and thyrotoxic pesticides authorized in Europe other than those widely studied (i.e. OCs, OPs, pyrethroids and carbamates) in the risk of ASD in children or ASD behavioral phenotypes in rodents. This publication is very theoretical and it relies on the interpretation of anxiety like behaviour seen in mice (but not in rats) and the extrapolation of this to humans. Also the paper only identifies a “potential link”, there is no actual exposure driven observations in humans. Therefore the publication is considered as not relevant.
73	Toxicology and metabolism	Onyekachi U. C. <i>et al.</i>	2019	Chemoprotective potentials of selected dietary supplements in glyphosate-based herbicide-induced nephrotoxicity and dyslipidemia in albino wistar rats	Asian Journal of Biological Sciences, (2019) Vol. 12, No. 2, pp. 320-327	Intraperitoneal injection with formulated product containing surfactant is not relevant to real life exposure scenarios. Environmental fate, metabolism and pharmaco-kinetics for glyphosate active ingredient versus sufractants are very different. Given the direct systemic exposure, these data are considered irrelevant to livestock and human health risk assessments.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
74	Toxicology and metabolism	Pu Y. <i>et al.</i>	2020	Glyphosate exposure exacerbates the dopaminergic neurotoxicity in the mouse brain after repeated administration of MPTP.	Neuroscience letters, (2020) Vol. 730, Art. No. 135032	This in vivo study investigated the potential of Roundup Maxload to cause parkinson's disease. Roundup Maxload (48% w/v, potassium salt), 52% other ingredients such as water and surfactants), is not the EU representative formulation, therefore the article is not relevant for the the EU glyphosate renewal.
75	Toxicology and metabolism	Pu Y. <i>et al.</i>	2020	Maternal glyphosate exposure causes autism-like behaviors in offspring through increased expression of soluble epoxide hydrolase.	Proceedings of the National Academy of Sciences of the United States of America, (2020) Vol. 117, No. 21, pp. 11753-11759	In this in vivo study one concentration of Roundup Maxload was used to dose pregnant mice in drinking water to investigate the risk for autism spectrum disorder in their offspring. Roundup Maxload (48% w/v, potassium salt, 52% other ingredients such as water and surfactants), is not the EU representative formulation, therefore the article is not relevant for the EU glyphosate renewal.
76	Toxicology and metabolism	Schnabel K. <i>et al.</i>	2020	Functionality and DNA-damage properties of blood cells in lactating cows exposed to glyphosate contaminated feed at different feed energy levels.	Archives of animal nutrition, (2020) Vol. 74, No. 2, pp. 87-106	The formulation tested is not the EU representative formulation MON 52276. Roundup Record (007525-60/MOT), Monsanto, Agrar Deutschland GmbH (Düsseldorf, Germany) was used as water-soluble granulate, containing 720 g GL/kg as an active ingredient. Therefore te article is not relevant for the EU glyphosate renewal.
77	Toxicology and metabolism	Turkmen R. <i>et al.</i>	2020	Determination of acute oral toxicity of glyphosate isopropylamine salt in rats.	Environmental science and pollution research international, (2020) Vol. 27, No. 16, pp. 19298-19303	The glyphosate formulation Knockdown 48 SL, which is marketed by Safa Tarım Inc. in Turkey, is not the EU representative formulation therefore the publication is not relevant for the EU glyphosate renewal.
78	Toxicology and metabolism	Zhao J. B. <i>et al.</i>	2020	Clinical analysis of 15 cases of acute glufosinate poisoning.	Zhonghua lao dong wei sheng zhi ye bing za zhi = Zhonghua laodong weisheng zhiyebing zazhi = Chinese journal of industrial hygiene and occupational diseases, (2020) Vol. 38, No. 5, pp. 372-374	This publication discusses acute poisoning cases of glufosinate-ammonium. Glyphosate was mentioned only once in the following context: Glufosinate is a broadspectrum contact herbicide. Its toxicity is between glyphosate and paraquat.

Appendix 1: AGG ADVICE on how to present the literature search in the dossier

ASSESSMENT GROUP ON GLYPHOSATE (AGG)

October 2019

**ADVICE TO GTF2:
HOW TO PRESENT THE LITERATURE SEARCH
IN THE DOSSIER TO BE SUBMITTED JUNE 2020**

The literature search should be carried out and presented as recommended in the EFSA Guidance EFSA Journal 2011;9(2):2092) including its recently published Appendix, available at the EFSA Journal.

**Rapid assessment of
titles/abstracts:**

Articles that are
considered as **not
relevant**:

Not necessary to submit
articles or study
summaries but
justification needed at a
general level, i.e. criteria
used to classify references
as being clearly non-
relevant.

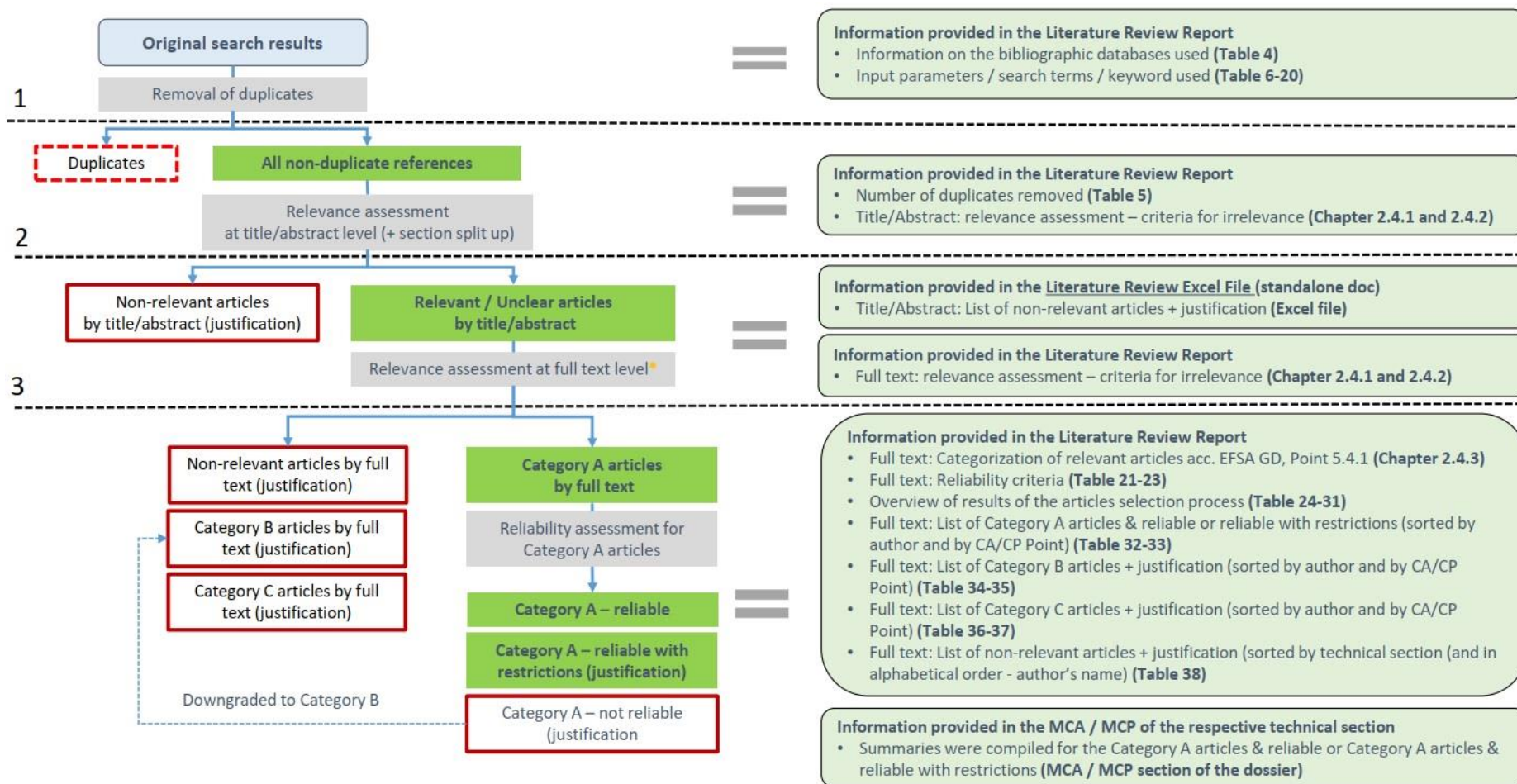
**Detailed assessment of
full text of articles:**
Articles that are
considered as **not
relevant**
or
considered **not reliable**:

Necessary to submit
articles and statement
with the reason of
rejection (no study
summaries).

**Detailed assessment of
full text of articles:**
Articles considered as
relevant and reliable:

Necessary to submit
articles. A detailed study
summary should be
provided in the relevant
section of Doc
MCA/MCP.

For presentation of
detailed study summary,
reference is made to
EFSA Administrative
guidance on submission
of dossiers and
assessment reports for
the peer-review of
pesticide active
substances (27 March
2019, doi:
10.2903/sp.efsa.2016.EN
-1612).

Appendix 2: The process of articles selection

* All articles (and their translations) evaluated at full-text level (detailed assessment) are submitted to the AGG.

Appendix 3: ORIGINAL SEARCH QUERY - January 2020 – June 2020

Preparing the search queries on STN:

FILE 'STNGUIDE' ENTERED AT 18:54:53 ON 01 JUL 2020
CHARGED TO COST=113898

L1 QUE SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
SAVE TEMP L1 GLY1/Q

L2 QUE SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
SAVE TEMP L2 GLY2/Q

L3 QUE SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL

L4 QUE SPE=ON ABB=ON PLU=ON HYDROXYMETHYLPHOSPHONATE OR
HYDROXYMETHYLPHOSPHONIC ACID

L5 QUE SPE=ON ABB=ON PLU=ON L3 OR L4
SAVE TEMP L5 GLY3/Q

L6 QUE SPE=ON ABB=ON PLU=ON 35404-71-8 OR METHYLAMINO METHYL
PHOSPHONIC ACID OR METHYLAMINOMETHYL PHOSPHONIC ACID OR
METHYLAMINOMETHYLPHOSPHONIC ACID OR N METHYL AMPA OR NSC
244826 OR PHOSPHONIC ACID METHYLAMINO METHYL OR PHOSPHONIC
ACID P METHYLAMINO METHYL

L7 QUE SPE=ON ABB=ON PLU=ON 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETH
YL PHOSPHONIC ACID OR 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETHYLPHOS
PHONIC ACID OR N GLYCERYL AMPA

L8 QUE SPE=ON ABB=ON PLU=ON 3 OXO 3 PHOSPHONOMETHYL AMINO
PROPANOIC ACID OR 3 OXO 3 PHOSPHONOMETHYL AMINOPROPANOIC ACID
OR N MALONYL AMPA

L9 QUE SPE=ON ABB=ON PLU=ON 993-13-5 OR DIHYDROGEN METHYLPHOSPH
ONATE OR METHANEPHOSPHONIC ACID OR METHYL PHOSPHONIC ACID OR
METHYLPHOSPHONIC ACID OR NSC 119358 OR PHOSPHONIC ACID METHYL
OR PHOSPHONIC ACID P METHYL

L10 QUE SPE=ON ABB=ON PLU=ON (L6 OR L7 OR L8 OR L9)
SAVE TEMP L10 GLY4/Q

L11 QUE SPE=ON ABB=ON PLU=ON 24569-83-3 OR 2 METHYL PHOSPHONOMET
HYL AMINO ACETIC ACID OR 2 METHYL PHOSPHONOMETHYL AMINOACETIC
ACID OR ACETIC ACID 2 N METHYL N PHOSPHONATOMETHYL AMINO OR
GLYCINE N METHYL N PHOSPHONOMETHYL OR GLYPHOSATE N METHYL OR
METHYL GLYPHOSATE

L12 QUE SPE=ON ABB=ON PLU=ON METHYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR METHYL PHOSPHONOMETHYL AMINOACETIC ACID OR N
METHYL N PHOSPHONOMETHYL GLYCINE OR N METHYLGLYPHOSATE OR N
PHOSPHONOMETHYL N METHYL GLYCINE OR N PHOSPHONOMETHYL N
METHYLGLYCINE

L13 QUE SPE=ON ABB=ON PLU=ON (L11 OR L12)
SAVE TEMP L13 GLY5/Q
D COST FUL

L14 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
EYE? OR IRRIT? OR SENS? OR ALLERG?

L15 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?

L16 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
OR HORMON? OR GONAD? OR DISRUPT?

L17 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
OCCUPAT?

L18 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
RISK ASSESSMENT?

L19 QUE SPE=ON ABB=ON PLU=ON (L14 OR L15 OR L16 OR L17 OR L18)
SAVE TEMP L19 TOX/Q

L20 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING

L21 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?

L22 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE

L23 QUE SPE=ON ABB=ON PLU=ON (L20 OR L21 OR L22)
SAVE TEMP L23 RES/Q

L24 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR
SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER

L25 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT

- L26 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT PROCESSES
- L27 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAINS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR PERSISTENCE OR LIGAND
- L28 QUE SPE=ON ABB=ON PLU=ON (L24 OR L25 OR L26 OR L27) SAVE TEMP L28 FATE/Q
- L29 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR ?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR PROTECTION GOALS OR ECO?
- L30 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS? OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI? OR ALG? OR CHIRON?
- L31 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR
- L32 QUE SPE=ON ABB=ON PLU=ON PLANT AND (SUBMERGE? OR EMERGE?)
- L33 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR PARASITOID
- L34 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIUUS OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL? OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR NITROGEN
- L35 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB? OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL
- L36 QUE SPE=ON ABB=ON PLU=ON (L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35) SAVE TEMP L36 ECO/Q

SESSION WILL BE HELD FOR 120 MINUTES

STN INTERNATIONAL SESSION SUSPENDED AT 19:51:07 ON 01 JUL 2020

' Final search - update Jul 2020:

FILE 'MEDLINE' ENTERED AT 10:56:11 ON 02 JUL 2020

CHARGED TO COST=113898

- L1 3605 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q
- L2 208 SEA SPE=ON ABB=ON PLU=ON L1 AND ED>20200107
- L3 206 SEA SPE=ON ABB=ON PLU=ON L2 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
- L4 31 SEA SPE=ON ABB=ON PLU=ON GLY3/Q
- L5 0 SEA SPE=ON ABB=ON PLU=ON L4 AND ED>20200224
- L6 583 SEA SPE=ON ABB=ON PLU=ON GLY4/Q
- L7 1 SEA SPE=ON ABB=ON PLU=ON L6 AND ED>20200227
- L8 1 SEA SPE=ON ABB=ON PLU=ON L7 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
- L9 11 SEA SPE=ON ABB=ON PLU=ON GLY5/Q
- L10 1 SEA SPE=ON ABB=ON PLU=ON L9 AND ED>20200504
- L11 1 SEA SPE=ON ABB=ON PLU=ON L10 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
- L12 207 SEA SPE=ON ABB=ON PLU=ON L3 OR L8 OR L11 SAVE TEMP L12 GLYMEDL/A

FILE 'AGRICOLA' ENTERED AT 11:20:29 ON 02 JUL 2020

CHARGED TO COST=113898

- L13 7095 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q
- L14 248 SEA SPE=ON ABB=ON PLU=ON L13 AND ED>20200107
- L15 248 SEA SPE=ON ABB=ON PLU=ON L14 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
- L16 6 SEA SPE=ON ABB=ON PLU=ON GLY3/Q
- L17 2 SEA SPE=ON ABB=ON PLU=ON L16 AND ED>20200224
- L18 2 SEA SPE=ON ABB=ON PLU=ON L17 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
- L19 123 SEA SPE=ON ABB=ON PLU=ON GLY4/Q
- L20 11 SEA SPE=ON ABB=ON PLU=ON L19 AND ED>20200227
- L21 11 SEA SPE=ON ABB=ON PLU=ON L20 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
- L22 8 SEA SPE=ON ABB=ON PLU=ON GLY5/Q
- L23 1 SEA SPE=ON ABB=ON PLU=ON L22 AND ED>20200504
- L24 1 SEA SPE=ON ABB=ON PLU=ON L23 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D T
- L25 258 SEA SPE=ON ABB=ON PLU=ON L15 OR L18 OR L21 OR L24 SAVE TEMP L25 GLYAGRI/A

FILE 'BIOSIS' ENTERED AT 11:32:39 ON 02 JUL 2020

CHARGED TO COST=113898

- L26 10702 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q

L27 364 SEA SPE=ON ABB=ON PLU=ON L26 AND ED>20200107
L28 316 SEA SPE=ON ABB=ON PLU=ON L27 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L29 30 SEA SPE=ON ABB=ON PLU=ON GLY3/Q
L30 1 SEA SPE=ON ABB=ON PLU=ON L29 AND ED>20200224
L31 1 SEA SPE=ON ABB=ON PLU=ON L30 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L32 471 SEA SPE=ON ABB=ON PLU=ON GLY4/Q
L33 8 SEA SPE=ON ABB=ON PLU=ON L32 AND ED>20200227
L34 6 SEA SPE=ON ABB=ON PLU=ON L33 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L35 22 SEA SPE=ON ABB=ON PLU=ON GLY5/Q
L36 0 SEA SPE=ON ABB=ON PLU=ON L35 AND ED>20200504
L37 321 SEA SPE=ON ABB=ON PLU=ON L28 OR L31 OR L34
SAVE TEMP L37 GLYBIOS/A

FILE 'CABA' ENTERED AT 11:39:50 ON 02 JUL 2020

CHARGED TO COST=113898

L38 18563 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q
L39 466 SEA SPE=ON ABB=ON PLU=ON L38 AND ED>20200107
L40 466 SEA SPE=ON ABB=ON PLU=ON L39 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L41 5 SEA SPE=ON ABB=ON PLU=ON GLY3/Q
L42 0 SEA SPE=ON ABB=ON PLU=ON L41 AND ED>20200224
L43 71 SEA SPE=ON ABB=ON PLU=ON GLY4/Q
L44 1 SEA SPE=ON ABB=ON PLU=ON L43 AND ED>20200227
L45 1 SEA SPE=ON ABB=ON PLU=ON L44 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L46 41 SEA SPE=ON ABB=ON PLU=ON GLY5/Q
L47 0 SEA SPE=ON ABB=ON PLU=ON L46 AND ED>20200504
L48 467 SEA SPE=ON ABB=ON PLU=ON L40 OR L45
SAVE TEMP L48 GLYCABA/A

FILE 'FSTA' ENTERED AT 11:46:51 ON 02 JUL 2020

CHARGED TO COST=113898

L49 507 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q
L50 22 SEA SPE=ON ABB=ON PLU=ON L49 AND ED>20200107
L51 20 SEA SPE=ON ABB=ON PLU=ON L50 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L52 1 SEA SPE=ON ABB=ON PLU=ON GLY3/Q
L53 0 SEA SPE=ON ABB=ON PLU=ON L52 AND ED>20200224
L54 9 SEA SPE=ON ABB=ON PLU=ON GLY4/Q
L55 0 SEA SPE=ON ABB=ON PLU=ON L54 AND ED>20200227
L56 2 SEA SPE=ON ABB=ON PLU=ON GLY5/Q
L57 0 SEA SPE=ON ABB=ON PLU=ON L56 AND ED>20200504
SAVE TEMP L51 GLYFSTA/A

FILE 'PQSCITECH' ENTERED AT 11:51:22 ON 02 JUL 2020

CHARGED TO COST=113898

L58 5130 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q
L59 108 SEA SPE=ON ABB=ON PLU=ON L58 AND ED>20200107
L60 105 SEA SPE=ON ABB=ON PLU=ON L59 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L61 24 SEA SPE=ON ABB=ON PLU=ON GLY3/Q
L62 0 SEA SPE=ON ABB=ON PLU=ON L61 AND ED>20200224
L63 294 SEA SPE=ON ABB=ON PLU=ON GLY4/Q
L64 1 SEA SPE=ON ABB=ON PLU=ON L63 AND ED>20200227
L65 1 SEA SPE=ON ABB=ON PLU=ON L64 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L66 12 SEA SPE=ON ABB=ON PLU=ON GLY5/Q
L67 0 SEA SPE=ON ABB=ON PLU=ON L66 AND ED>20200504
L68 106 SEA SPE=ON ABB=ON PLU=ON L60 OR L65
SAVE TEMP L68 GLYPQSCI/A

FILE 'TOXCENTER' ENTERED AT 11:56:52 ON 02 JUL 2020

CHARGED TO COST=113898

L69 15185 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q
L70 654 SEA SPE=ON ABB=ON PLU=ON L69 AND ED>20200107
L71 463 SEA SPE=ON ABB=ON PLU=ON L70 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L72 90 SEA SPE=ON ABB=ON PLU=ON GLY3/Q
L73 6 SEA SPE=ON ABB=ON PLU=ON L72 AND ED>20200224
L74 2 SEA SPE=ON ABB=ON PLU=ON L73 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L75 1244 SEA SPE=ON ABB=ON PLU=ON GLY4/Q
L76 12 SEA SPE=ON ABB=ON PLU=ON L75 AND ED>20200227
L77 9 SEA SPE=ON ABB=ON PLU=ON L76 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L78 40 SEA SPE=ON ABB=ON PLU=ON GLY5/Q
L79 1 SEA SPE=ON ABB=ON PLU=ON L78 AND ED>20200504
L80 1 SEA SPE=ON ABB=ON PLU=ON L79 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
L81 470 SEA SPE=ON ABB=ON PLU=ON L71 OR L74 OR L77 OR L80
SAVE TEMP L81 GLYTOXC/A

FILE 'EMBASE' ENTERED AT 12:11:20 ON 02 JUL 2020

CHARGED TO COST=113898

L82 4354 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q
L83 162 SEA SPE=ON ABB=ON PLU=ON L82 AND ED>20200107

L84 160 SEA SPE=ON ABB=ON PLU=ON L83 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L85 48 SEA SPE=ON ABB=ON PLU=ON GLY3/Q

L86 0 SEA SPE=ON ABB=ON PLU=ON L85 AND ED>20200224

L87 1292 SEA SPE=ON ABB=ON PLU=ON GLY4/Q

L88 6 SEA SPE=ON ABB=ON PLU=ON L87 AND ED>20200227

L89 6 SEA SPE=ON ABB=ON PLU=ON L88 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L90 11 SEA SPE=ON ABB=ON PLU=ON GLY5/Q

L91 0 SEA SPE=ON ABB=ON PLU=ON L90 AND ED>20200504

L92 166 SEA SPE=ON ABB=ON PLU=ON L84 OR L89
SAVE TEMP L92 GLYEMBA/A

FILE 'ESBIOBASE' ENTERED AT 12:18:43 ON 02 JUL 2020
CHARGED TO COST=113898

L93 4837 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q

L94 204 SEA SPE=ON ABB=ON PLU=ON L93 AND ED>20200107

L95 204 SEA SPE=ON ABB=ON PLU=ON L94 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L96 15 SEA SPE=ON ABB=ON PLU=ON GLY3/Q

L97 0 SEA SPE=ON ABB=ON PLU=ON L96 AND ED>20200224

L98 179 SEA SPE=ON ABB=ON PLU=ON GLY4/Q

L99 2 SEA SPE=ON ABB=ON PLU=ON L98 AND ED>20200227

L100 2 SEA SPE=ON ABB=ON PLU=ON L99 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L101 12 SEA SPE=ON ABB=ON PLU=ON GLY5/Q

L102 0 SEA SPE=ON ABB=ON PLU=ON L101 AND ED>20200504

L103 206 SEA SPE=ON ABB=ON PLU=ON L95 OR L100
SAVE TEMP L103 GLYESBIO/A

FILE 'HCAPLUS' ENTERED AT 12:25:03 ON 02 JUL 2020
CHARGED TO COST=113898

L104 24654 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q

L105 743 SEA SPE=ON ABB=ON PLU=ON L104 AND ED>20200107

L106 346 SEA SPE=ON ABB=ON PLU=ON L105 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L107 701 SEA SPE=ON ABB=ON PLU=ON GLY3/Q

L108 8 SEA SPE=ON ABB=ON PLU=ON L107 AND ED>20200224

L109 3 SEA SPE=ON ABB=ON PLU=ON L108 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L110 4029 SEA SPE=ON ABB=ON PLU=ON GLY4/Q

L111 36 SEA SPE=ON ABB=ON PLU=ON L110 AND ED>20200227

L112 15 SEA SPE=ON ABB=ON PLU=ON L111 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L113 120 SEA SPE=ON ABB=ON PLU=ON GLY5/Q

L114 0 SEA SPE=ON ABB=ON PLU=ON L113 AND ED>20200504

L115 364 SEA SPE=ON ABB=ON PLU=ON L106 OR L109 OR L112
SAVE TEMP L115 GLYHCAPI/A

FILE 'SCISEARCH' ENTERED AT 12:30:36 ON 02 JUL 2020
CHARGED TO COST=113898

L116 11035 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q

L117 556 SEA SPE=ON ABB=ON PLU=ON L116 AND ED>20200107

L118 553 SEA SPE=ON ABB=ON PLU=ON L117 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L119 69 SEA SPE=ON ABB=ON PLU=ON GLY3/Q

L120 2 SEA SPE=ON ABB=ON PLU=ON L119 AND ED>20200224

L121 2 SEA SPE=ON ABB=ON PLU=ON L120 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L122 876 SEA SPE=ON ABB=ON PLU=ON GLY4/Q

L123 18 SEA SPE=ON ABB=ON PLU=ON L122 AND ED>20200227

L124 18 SEA SPE=ON ABB=ON PLU=ON L123 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T

L125 28 SEA SPE=ON ABB=ON PLU=ON GLY5/Q

L126 0 SEA SPE=ON ABB=ON PLU=ON L125 AND ED>20200504

L127 571 SEA SPE=ON ABB=ON PLU=ON L118 OR L121 OR L124
SAVE TEMP L127 GLYSCIS/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 12:38:46 ON 02 JUL 2020
CHARGED TO COST=113898

L128 1648 DUP REM L12 L25 L37 L48 L51 L68 L81 L92 L103 L115... (1508 DUP
ANSWERS '1-207' FROM FILE MEDLINE
ANSWERS '208-430' FROM FILE AGRICOLA
ANSWERS '431-639' FROM FILE BIOSIS
ANSWERS '640-982' FROM FILE CABA
ANSWERS '983-993' FROM FILE FSTA
ANSWERS '994-1051' FROM FILE PQSCITECH
ANSWERS '1052-1205' FROM FILE TOXCENTER
ANSWERS '1206-1276' FROM FILE EMBASE
ANSWERS '1277-1310' FROM FILE ESBIOBASE
ANSWERS '1311-1424' FROM FILE HCAPLUS
ANSWERS '1425-1648' FROM FILE SCISEARCH
SAVE L128 GLY202007/A

L129 1317 SEA SPE=ON ABB=ON PLU=ON L128 AND TOX/Q
SAVE TEMP L129 GLYTOX/A

L130 1432 SEA SPE=ON ABB=ON PLU=ON L128 AND RES/Q
SAVE TEMP L130 GLYRES/A

L131 985 SEA SPE=ON ABB=ON PLU=ON L128 AND FATE/Q
SAVE TEMP L131 GLYFATE/A

L132 1541 SEA SPE=ON ABB=ON PLU=ON L128 AND ECO/Q
SAVE TEMP L132 GLYECO/A
L133 1638 SEA SPE=ON ABB=ON PLU=ON (L129 OR L130 OR L131 OR L132)
SAVE L133 GLY202007FIN/A
D TI 1-1638

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 17:01:53 ON 02 JUL 2020

Literature Review Report

**Scientific peer-reviewed open literature covering the
publication period of July 2020 to December 2020 for the
approval of pesticide active substance glyphosate and
metabolites**

**as under Article 8(5) of Regulation (EC) No 1107/2009
(Ref. EFSA Journal 2011; 9(2) 2092)**

Report number

113898-CA9-2

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Anonymous, 2022

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Reporting Date

28 April 2022

Date of search(es):

5 January 2021

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1 Summary

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document (GD) - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”², and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG)⁵ on how to present the literature search in the dossier has been followed. Please refer to **Appendix 1** (page 81) for more details.

This Literature Review Report summarizes the search and evaluation of the glyphosate scientific peer-reviewed open literature covering the publication period of July 2020 to December 2020 and is supplementary to the previous searches covering the publication period of January 2010 to June 2020.⁶

The literature search was conducted accessing 11 bibliographic databases via the service provider STN.

In total, 880 articles were identified upon removal of duplicates within the current search (July 2020 – December 2020) and articles found already in the previous searches (January 2010 – June 2020).

All 880 articles were subsequently assessed for their relevance at title/abstract level (“rapid assessment” according to the procedure and requirements stated in the EFSA 2092 GD).

A total of 786 of the 880 articles were identified as “non-relevant” in the rapid assessment (e.g. publications dealing with chemical synthesis, efficacy, analytical methods or publications which are not related to glyphosate or its metabolites) and excluded from further evaluation. Due to the large quantity of data, and as agreed with the AGG, the list of articles and the justification for their non-relevance is provided in a standalone Literature Review Excel File (Document ID: 113898_CA9-2_Literature Review Excel File).

For the remaining 94 articles, identified as potentially “relevant” or of “unclear relevance” in the rapid assessment, the full-text documents⁷ were reviewed in detail (“detailed assessment”).

A total of 30 articles of the remaining 94 articles were identified as “non-relevant” in the detailed assessment and were excluded from further evaluation. The list of the articles and the justification for their non-relevance is provided in **Table 38** of this Literature Review Report document.

The remaining 64 articles of the 94 articles were identified as “relevant” in the detailed assessment and

¹ (aminomethyl)phosphonic acid (AMPA), N-acetyl-AMPA, N-acetyl-glyphosate, (hydroxymethyl)phosphonic acid (HMPA), N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA, methylphosphonic acid and N-methylglyphosate.

² European Food Safety Authority, 2011: *Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) No 1107/2009*. EFSA Journal 2011;9(2):2092. 49 pp, doi:10.2903/j.efsa.2011.2092.

³ Appendix to EFSA Journal 2011;9(2):2092. *Further guidance on performing and presenting the literature search*. Available online: <https://efsa.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.2903/j.efsa.2011.2092&file=efs22092-sup-0001-Appendix.pdf>

⁴ European Food Safety Authority, 2019. *Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*. EFSA supporting publication 2019:EN-1612. 49 pp., doi:10.2903/sp.efsa.2019.EN-1612.

⁵ On 10th May 2019, the European Commission appointed four Member States (France, Hungary, the Netherlands and Sweden) to act jointly as 'rapporteurs' for the AIR5 process assessment of glyphosate. This group of Member States is known as the Assessment Group on Glyphosate (AGG).

⁶ See Literature Review Reports 108689-CA9-1 and 113898-CA9-1 for more details.

⁷ All articles used within the glyphosate dossier have been purchased via Copyright Clearance Centre. In some cases, please note that the Copyright Clearance is not overtly visible, and in some instances is part of the article documents. Should the Copyright Clearance proof be required, this can be provided upon request.

were classified according to the EFSA 2092 GD (EFSA Journal 2011;9(2):2092, Point 5.4.1).

- Category A** Articles which provide data for establishing or refining risk assessment parameters. For all articles of Category A, a reliability assessment was performed as recommended in the EFSA 2092 GD. In addition, summaries were compiled for Category A articles classified as “reliable” or “reliable with restrictions”. The list of these Category A & reliable / reliable with restrictions articles can be found in **Table 32** and **Table 33** of this Literature Review Report document.
- Category B** Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment. A justification for such decision is provided as recommended in the EFSA 2092 GD. The list of these Category B articles and the justifications can be found in **Table 34** and **Table 35** of this Literature Review Report document.
- Category C** Articles for which relevance cannot be clearly determined. As recommended in the EFSA 2092 GD, an explanation is provided why the relevance could not be determined. The list of these Category C articles and the explanations can be found in **Table 36** and **Table 37** of this Literature Review Report document.

The full outcome of the literature evaluation is provided in **Table 1**.

Table 1: Summary of the literature review

Section	Number of articles found	Rapid assessment (title/abstract level)		Detailed assessment (full-text level)	
		non-relevant articles	potentially relevant / unclear relevance	non-relevant articles	relevant articles (Category A+B+C)
Efficacy / Agronomy ^{a)}	372	372	n.a.	n.a.	n.a.
Analytical methods ^{a)}	67	67	n.a.	n.a.	n.a.
Other non-relevant categories ^{b)}	74	74	n.a.	n.a.	n.a.
Ecotoxicology	133	107	26	10	16
E-fate	91	84	7	4	3
Residues	26	15	11	2	9
Toxicology	117	67	50	14	36
Total	880	786	94	30	64

^{a)} Efficacy / Agronomy (e.g. reporting desired effects on organisms to be controlled) and development of analytical methods (artificial measurements) do not provide information useful/required for the environmental or human safety risk assessment.

^{b)} The category "other non-relevant categories" covers a wide range of scientific publications which are not related to glyphosate or its metabolites or are not related to exposure of humans or the environment to glyphosate or its metabolites and thus not relevant for the risk assessments.

The full outcome of the relevant articles after detailed (full-text) assessment is provided in **Table 2**.

Table 2: Relevant articles by full-text classified according to the EFSA 2092 GD, Point 5.4.1

Section	Relevant articles by full-text (EFSA 2092 GD, Point 5.4.1)		
	Category A ^{a)}	Category B ^{b)}	Category C ^{c)}
Ecotoxicology	3	12	1
E-fate	3	0	0
Residues	0	9	0
Toxicology	3	32	1
Total	9	53	2

^{a)} Category A: Articles, which provide data for establishing or refining risk assessment parameters.

^{b)} Category B: Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment.

^{c)} Category C: Articles for which relevance cannot be clearly determined.

All articles (and their translations) evaluated at full text level (detailed assessment) **were submitted** to the AGG in a Portable Document Format (PDF).

Please refer to **Appendix 2** (page 82) to see the article selection process in detail.

2 Introduction

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”², and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA Supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG) on how to present the literature search in the dossier has been followed. Please refer to **Appendix 1** (page 81) for more details.

In June 2020, a Literature Review Report (Document ID: 108689-CA9-1) summarizing results of the search of the glyphosate scientific peer-reviewed open literature published from January 2010 to December 2019 was submitted to the AGG as part of the glyphosate AIR5 dossier. In July 2020 during the dossier completeness check (point 23)⁸, the AGG requested a top-up search for glyphosate open literature covering the publication period of January 2020 to June 2020. In October 2020, a Literature Review Report (Document ID: 113898-CA9-1) summarizing results of this top-up search was submitted to the AGG.

Furthermore, an additional top-up literature search of the glyphosate scientific peer-reviewed open literature was performed in January 2021 and the results of the search are summarized in this Literature Review Report (Document ID: 113898-CA9-2). The current search covers the publication period of July 2020 to December 2020. Details for this search are provided below.

The search has been conducted via the online service provider STN (www.stn-international.de) that provides access to a broad range of databases and to published research, journal literature, patents, structures, sequences, properties, and other data.

To offer a comprehensive literature search covering the requirements of the EFSA 2092 GD eleven databases have been used: AGRICOLA, BIOSIS, CABA, CAPLUS, EMBASE, ESBIODATABASE, MEDLINE, TOXCENTER, FSTA, PQSCITECH, and SCISEARCH.

Please refer to **Table 3** for more details on the literature search.

⁸ AGG’s letter dated 10-July-2020, subject “Glyphosate: Check of completeness of the supplementary dossier for renewal of approval under Commission Implementing Regulation (EU) No 844/2012”, section 2: Elements to be submitted in accordance with Article 11(5) of Regulation (EU) No 844/2012, point 23.

Table 3: Overview of the search conducted for glyphosate and its metabolites

Performed for	Covering publication period	Conducted on
Glyphosate AMPA N-acetyl-AMPA N-acetyl-glyphosate HMPA N-methyl-AMPA N-glyceryl-AMPA N-malonyl-AMPA methylphosphonic acid N-methylglyphosate	July 2020 – December 2020	5 January 2021

AMPA = (aminomethyl)phosphonic acid
 HMPA = (hydroxymethyl)phosphonic acid

A “focused search for grouped data requirements”⁹ have been performed (a combination of a substance basic input parameters, keywords and “search filters” defined for the four technical sections – toxicology, residues, environmental fate, and ecotoxicology).

Please refer to **Chapter 2.2** and **2.3** (pages 14 and 16) for the input parameters, keywords and search filters used in the literature search.

Regarding details on the bibliographic databases used in the literature search, please refer to **Chapter 2.1 (Table 4)**.

Regarding the number of articles retrieved in the literature search, please refer to **Chapter 2.1 (Table 5)**.

For the relevance and reliability assessment, please refer to **Chapter 2.4** and **2.5** (pages 19 and 22).

For the full outcome of the literature search and for the individual technical sections, please refer to **Chapter 3** (page 27).

⁹ Citation from the EFSA 2092 Guidance Document: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

2.1 Bibliographic databases used in the literature search

Table 4: Overview of the databases used in the literature search

Data requirement(s) captured in the search	Details of the search(es)			
	1. AGRICOLA	2. BIOSIS	3. CABA	4. CAPLUS
Justification for choosing the source:	Provides literature from agriculture and related fields, e.g. biology, biotechnology, botany, ecology etc.	Provides the most comprehensive and largest life science literature, e.g. biosciences, biomedicine etc.	Provides literature from agriculture and related sciences, e.g. biotechnology, forestry, veterinary medicine etc.	Provides literature from chemistry and related fields, e.g. biochemistry, chemical engineering etc.
Number of records in the database at the time of search:	> 7.1 million (09/2020)	> 27.8 million (04/2019)	> 9.9 million (09/2020)	> 57.0 million (01/2022)
Database update:	Monthly	Weekly	Weekly	Daily updates bibliographic data; weekly updates indexing data
Date of the search:	05 January 2021	05 January 2021	05 January 2021	05 January 2021
Database covers records:	1970-present	1926-present	1973-present	1907-present and more than 180,000 pre-1907
Date of the latest database update:	7 December 2020	30 December 2020	05 January 2021	04 January 2021
Language limit:	No	No	No	No
Document types <u>excluded</u> that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	125	291	470	504

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)		
	5. MEDLINE	6. EMBASE	7. TOXCENTER
Justification for choosing the source:	Provides literature from every area of medicine.	Provides literature from biomedical and pharmaceutical fields, e.g. bioscience, biochemistry, human medicine, forensic science, paediatrics, pharmacy, pharmacology, drug therapy, psychiatry, public health, biomedical engineering, environmental science.	Provides literature on pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals.
Number of records in the database at the time of search:	> 33.5 million (01/2022)	> 34.3 million (08/2018)	> 16.2 million (01/2022)
Database update:	Six times each week, with an annual reload	Daily	Weekly
Date of the search:	05 January 2021	05 January 2021	05 January 2021
Database covers records:	1946-present	1974-present	1907-present
Date of the latest database update:	04 January 2021	04 January 2021	04 January 2021
Language limit:	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .		
Total number of records retrieved:	237	204	593

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)			
	8. FSTA	9. PQSCITECH	10. ESBIODBASE	11. SCISEARCH
Justification for choosing the source:	Provides literature on scientific and technological aspects of the processing and manufacture of human food products, e.g. biotechnology, hygiene and toxicology, engineering etc.	Provides a valuable and huge resource of literature (merge of 25 STN databases) from all science areas and technology; from engineering to lifescience.	Provides comprehensive literature on entire spectrum of biological and biosciences research, e.g. microbiology, biotechnology, ecological & environmental sciences, genetics, plant and crop science, toxicology and many more.	Provides one of the largest multidisciplinary scientific literature covering a broad field of sciences, technology, and biomedicine.
Number of records in the database at the time of search:	> 1.59 million (09/2020)	> 33.6 million (01/2021)	> 9.0 million (01/2021)	> 47.7 million (08/2019)
Database update:	Weekly	Monthly	Weekly	Weekly
Date of the search:	05 January 2021	05 January 2021	05 January 2021	05 January 2021
Database covers records:	1969-present	1962-present	1994-present	1974-present
Date of the latest database update:	29 December 2020	16 December 2020	30 December 2020	04 January 2021
Language limit:	No	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	37	95	200	541

Table 5: Total number of articles retrieved

Scope of the search	After automatic removal of duplicates within the databases in the current search (Jul 2020 – Dec 2020)	After applying search filters ^{a)} within the current search (Jul 2020 – Dec 2020)	After manual removal of duplicates ^{b)} within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020) ^{c)}
July 2020 – December 2020 Glyphosate AMPA N-acetyl-AMPA N-acetyl-glyphosate HMPA N-methyl-AMPA N-glyceryl-AMPA N-malonyl-AMPA methylphosphonic acid N-methylglyphosate	1797	1781	880

^{a)} Search filters applied for the four technical sections (residues, environmental fate, toxicology and ecotoxicology). Please refer to **Chapter 2.3** for more details (page 16).

^{b)} Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{c)} Please refer to the Literature Review Report (LRR) 108689-CA9-1 and 113898-CA9-1.

Note: LRR 108689-CA9-1 covers the publication period of 1 January 2010 to 31 December 2019, LRR 113898-CA9-1 covers the publication period of 1 January 2020 to 30 June 2020.

2.2 Input parameters used in the literature search

The basic input parameters used in the literature search, e.g. IUPAC, chemical name or CAS number, are provided in **Table 6 - Table 15**.

Table 6: Input parameters – active substance Glyphosate

Substance name	Glyphosate Salts: isopropylamine, potassium, ammonium, methylmethanamine
IUPAC / CA name	2-(phosphonomethylamino)acetic acid
CAS number(s)	1071-83-6 Salts: 38641-94-0, 70901-12-1, 39600-42-5, 69200-57-3, 34494-04-7, 114370-14-8, 40465-66-5, 69254-40-6

Table 7: Input parameters – metabolite AMPA

Substance name	AMPA
IUPAC / CA name	(aminomethyl)phosphonic acid
CAS number(s)	1066-51-9

Table 8: Input parameters – metabolite N-acetyl glyphosate

Substance name	N-acetyl glyphosate
IUPAC / CA name	N-acetyl-N-(phosphonomethyl)glycine
CAS number(s)	129660-96-4

Table 9: Input parameters – metabolite N-acetyl AMPA

Substance name	N-acetyl AMPA
IUPAC / CA name	[(acetylamino)methyl]phosphonic acid
CAS number(s)	57637-97-5

Table 10: Input parameters – metabolite HMPA

Substance name	HMPA
IUPAC / CA name	(hydroxymethyl)phosphonic acid
CAS number(s)	2617-47-2

Table 11: Input parameters – metabolite N-methyl AMPA

Substance name	N-methyl AMPA
IUPAC / CA name	[(methylamino)methyl]phosphonic acid
CAS number(s)	35404-71-8

Table 12: Input parameters – metabolite N-glyceryl AMPA

Substance name	N-glyceryl AMPA
IUPAC / CA name	(2,3-dihydroxypropanoylamino)methylphosphonic acid
CAS number(s)	No data

Table 13: Input parameters – metabolite N-malonyl AMPA

Substance name	N-malonyl AMPA
IUPAC / CA name	3-oxo-3-(phosphonomethylamino)propanoic acid
CAS number(s)	no data

Table 14: Input parameters – metabolite methylphosphonic acid

Substance name	methylphosphonic acid
IUPAC / CA name	methylphosphonic acid
CAS number(s)	993-13-5

Table 15: Input parameters – metabolite N-methylglyphosate

Substance name	N-methylglyphosate
IUPAC / CA name	2-[methyl(phosphonomethyl)amino]acetic acid
CAS number(s)	24569-83-3

2.3 Keywords and search filters used in the literature search

The approach used for the search was the “focused search for grouped data requirements”¹⁰, which combines the active substance and metabolite basic input parameters, keywords and search filters defined for each technical section. Please refer to **Table 16** for more details on the keywords used and to **Table 17 - Table 20** for the search filters.

Table 16: Keywords used for the active substance glyphosate and its metabolites

Gly1: Glyphosate and AMPA	glyphosat? OR glifosat? OR glyfosat? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR aminomethyl phosphonic OR aminomethylphosphonic OR 1066-51-9
Gly2: N-acetyl glyphosate and N-acetyl AMPA	2 acetyl phosphonomethyl amino acetic acid OR n acetyl glyphosate OR n acetyl glyphosate OR n acetyl n phosphonomethyl glycine OR 129660-96-4 OR n acetyl ampa OR acetyl amino methyl phosphonic acid OR acetylaminomethyl phosphonic acid OR 57637-97-5
Gly 3: HMPA	2617-47-2 OR hydroxymethanephosphonic acid OR hydroxymethyl phosphonate OR hydroxymethylphosphonate OR hydroxymethyl phosphonic acid OR hydroxymethylphosphonic acid OR methanhydroxyphosphonic acid OR phosphonic acid(1w)hydroxymethyl OR phosphonomethanol
Gly 4: N-methyl AMPA	35404-71-8 OR methylamino methyl phosphonic acid OR methylaminomethyl phosphonic acid OR methylaminomethylphosphonic acid OR n methyl ampa OR nsc 244826 OR phosphonic acid methylamino methyl OR phosphonic acid p methylamino methyl
Gly 4: N-glyceryl AMPA	2 3 dihydroxy 1 oxopropyl aminomethyl phosphonic acid OR 2 3 dihydroxy 1 oxopropyl aminomethylphosphonic acid OR n glyceryl ampa
Gly 4: N-malonyl AMPA	3 oxo 3 phosphonomethyl amino propanoic acid OR 3 oxo 3 phosphonomethyl aminopropanoic acid OR n malonyl ampa
Gly 4: methylphosphonic acid	993-13-5 OR dihydrogen methylphosphonate OR methanephosphonic acid OR methyl phosphonic acid OR methylphosphonic acid OR nsc 119358 OR phosphonic acid methyl OR phosphonic acid p methyl
Gly 5: N-methylglyphosate (NMG)	24569-83-3 OR 2 methyl phosphonomethyl amino acetic acid OR 2 methyl phosphonomethyl aminoacetic acid OR acetic acid 2 n methyl n phosphonomethyl amino OR glycine n methyl n phosphonomethyl OR glyphosate n methyl OR methyl glyphosate OR methyl phosphonomethyl amino acetic acid OR methyl phosphonomethyl aminoacetic acid OR n methyl n phosphonomethyl glycine OR n methylglyphosate OR n phosphonomethyl n methyl glycine OR n phosphonomethyl n methylglycine

(1w) = proximity operator (this order, up to 1 word between)

AND / OR / NOT = boolean search operators

? = any character(s)

¹⁰ Citation from the EFSA 2092 GD: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

Table 17: Search filters related to the technical section toxicology

Toxicology
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
tox? OR hazard? OR adverse OR health OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR in vivo OR in vitro OR invivo OR invitro OR mode of action OR skin? OR eye? OR irrit? OR sensi? OR allerg? OR rat OR rats OR dog? OR rabbit? OR guinea pig? OR mouse OR mice OR metabolism OR metabolite? OR metabolic OR distribution OR adsorption OR excretion OR elimination OR kinetic OR cytochrome OR enzym? OR gen? OR muta? OR chromos? OR clastogen? OR DNA OR carcino? OR cancer? OR tumor? OR tumour? OR oncog? OR oncol? OR malign? OR immun? OR neur? OR endocrin? OR hormon? OR gonad? OR disrupt? OR reproduct? OR development? OR malform? OR anomal? OR fertil? OR foet? OR fet? OR matern? OR pregnan? OR embryo? OR epidem? OR medical? OR poison? OR exposure OR operator? OR bystander? OR resident? OR worker? OR occupat? biomonitoring OR human exposure OR microbiome OR oxidative stress OR apoptosis OR necrosis OR cytotoxicity OR Polyoxyethyleneamine OR POEA OR surfactant OR risk assessment?

Table 18: Search filters related to the technical section residues

Residues
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
uptake OR translocation OR rumen OR storage stability OR storage OR stability OR metabolic OR metabolism OR breakdown OR nature of residues OR residue? OR magnitude of residues OR process? OR effects of processing OR dessicant OR preharvest OR preemerg? OR ?resistant? OR ?toleran? OR transgenic OR hydroly? OR rotation? OR succeed? OR plant? OR crop? OR feed? OR animal? OR livestock? OR hen OR cattle OR ruminant? OR goat? OR cow? OR pig? OR dietary OR assessment OR risk assessment OR consum? OR exposure

Table 19: Search filters related to the technical section environmental fate

Environmental fate
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
soil OR water OR sediment OR degradat? OR photo? OR soil residues OR soil accumulat? OR soil contaminat? OR mobility OR sorption OR column leaching OR aged residue OR leach? OR lysimeter OR groundwater OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR transport OR micronutrient OR phosphate OR iron OR manganese OR half-life OR halflife OR half-lives OR halflives OR DT50 OR kinetics OR off-site movement OR removal OR drinking water OR water treatment processes OR atmospheric deposition OR tile-drains OR surface water OR monitoring data OR disinfectant OR ozone OR tillage OR infiltration OR hard surface OR rainwater OR rain water OR chelat? OR complex? OR mineralization OR persistence OR ligand

Table 20: Search filters related to the technical section ecotoxicology

Ecotoxicology
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR plant AND submerge? OR emerge? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator OR solitary OR alg? OR aquatic OR freshwater OR vertebrat? OR mammal? OR rat OR mouse OR mice OR rabbit OR hare OR protection OR model? OR vole OR pest OR arthropod? OR beneficials OR typhlodromus OR aphidius OR parasitoid OR predator OR chrysoperla OR Orius OR spider OR worm? OR ?worm OR Eisenia OR soil OR collembol? OR macro organism OR folsomia OR springtail OR decompos? OR micro organisms OR microorganisms OR microbial OR carbon OR nitrogen OR plant? OR vegetative vigo? OR seedling OR germination OR monocot? OR dicot? OR sewage OR activated sludge OR biodegrad? OR bioaccumulation? OR amphib? OR reptile? OR aquatic plant OR beneficial

2.4 Relevance assessment

After removal of duplicates, the remaining articles were assessed for their relevance. First, at “title / abstract level” (so-called “rapid assessment”) and second, at “full-text level” (so called “detailed assessment”).

Articles that were identified as “non-relevant” in the rapid assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For articles that were not excluded in the rapid assessment (potentially relevant articles and articles of an unclear relevance), a detailed relevance assessment of a full-text document was performed.

Articles that were identified as “non-relevant” in the detailed assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For both assessments (rapid and detailed) the same criteria for non-relevance were applied (see **Chapter 2.4.1** and **2.4.2**).

2.4.1 Criteria applied for “non-relevance”

Articles identified as “non-relevant” in the rapid and detailed assessments belong to one of the following categories and were excluded from further evaluation. A justification for their non-relevance was provided.

- Publications related to efficacy (resistance related articles, new uses of control of pest / crops) or to agricultural / biological research (crop science, breeding, fertilization, tillage, fundamental plant physiology / micro- / molecular biology).
- Publications dealing with analytical methods / development.
- Publications describing new methods of synthesis (discovery / developments) or other aspects of basic (organic / inorganic) chemistry.
- Patents.
- Wastewater treatment.
- Abstracts referring to a conference contribution that does not contain sufficient data / information for regulatory risk assessment.
- Publications focusing on genetically modified organisms / transgenic crops; no data directly relevant to glyphosate evaluation (e.g. crop compositional analysis, gene flow, protein characterization).
- Publications where glyphosate or a relevant metabolite were not the focus of the publication.
- Secondary information including scientific and regulatory reviews¹¹.
- Articles dealing with political / socio / economic analysis.
- Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity).
- Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes.
- Findings not related to ecotoxicology, toxicology, residues, and environmental fate.
- Publications not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.).

¹¹ Reviews have been partly evaluated on full text level as well – case by case decision.

- Publications dealing with a Roundup¹² formulation / other glyphosate formulations that is not the representative formulation for the AIR5 dossier and thus not relevant to the EU glyphosate renewal.
- Publications dealing with general pesticide exposures (not glyphosate specific).
- Publications generating endpoints that are not relatable to the EU level regulatory risk assessment (e.g. findings based on enzyme, cellular and molecular level etc.).
- Opinion articles where no new data is provided that can be used for the EU regulatory risk assessment.

2.4.2 Additional criteria for articles on the health and exposure of glyphosate

The scientific literature on the health effects of glyphosate can be subdivided in two main parts:

- Articles containing data on glyphosate acid and salts and on the reference glyphosate formulation MON 52276, and
- Articles only containing data on glyphosate formulations and/or co-formulants that have a composition different from that of the reference formulation MON 52276.

In the case of articles only relating to glyphosate formulations *in vitro* testing with the exception of cell/tissue systems¹³ that are likely to come in direct contact with formulations and glyphosate formulations containing other active ingredients are excluded. The reason for the exclusion of *in vitro* testing of formulations to assess health effects as a result of systemic exposure is the presence of surfactants which produce cell toxicity based on the destabilization of the cell membrane and the mitochondrial membrane thus masking the specific toxicity of glyphosate. The toxicity of the co-formulants in combination with glyphosate is dependent on the concentration and the nature of the co-formulants and can be addressed on a case-by-case basis during the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

In the relevance of glyphosate data, those articles have been considered as not relevant (and reliable) for the assessment for systemic toxicity when only *in vitro* results are presented with glyphosate concentrations above 1 mM. This is because it is physiologically not possible to attain such concentrations in standard regulatory *in vivo* testing due to the limited oral bioavailability (approx. 20%), very low dermal absorption, and rapid systemic elimination of glyphosate in *in vivo* test systems. It thus makes no sense to include such data in the risk assessment of glyphosate. Exceptions can be made in the event of direct contact with formulations resulting in localized effects, but then there is the contribution of the toxicity of the co-formulants which can be better addressed in the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

¹² Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contains a surfactant polyethoxylated tallow amine (also polyoxyethyleneamine, POEA) which is not permitted for use in the EU. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in articles dealing with POEA based Roundup formulations cannot be related to the representative formulation MON 52276 which is quaternary-ammonium based (and not POEA based).

¹³ Glyphosate-based herbicides (GBH) contain surfactants that destabilize the cell membrane and the mitochondrial membrane and thus produce a toxicity that is not representative for glyphosate (see Levine S. L. et al, *Cell Biol. Toxicol.* (2007) 23:385-400). This has been clearly demonstrated in the scientific literature and also in some papers reviewed for this submission where *in vitro* glyphosate toxicity is compared against that of GBH and surfactants.

The limit of 1 mM has been based on the single dose oral pharmacokinetic data of a formulation containing 71.7% w/w glyphosate where an oral dose of 1,430 mg/kg bw in the rat gives plasma levels of 38.1 µg/mL or 0.225 mM after 2 hours. When extrapolated linearly (which is possible for glyphosate because it is not subject to hepatic metabolism) this gives plasma levels of 53.3 µg/mL or 0.315 mM at 2 hours after oral intake of 2,000 mg/kg bw and 107 µg/mL or 0.630 mM at 2 hours after oral intake of 4,000 mg/kg bw. A systemic concentration of glyphosate of 1 mM would then represent an oral dose of more than 6,000 mg/kg bw which is completely unreasonable for repeat dose experimental *in vivo* testing under today's OECD test guidelines. The ADI for glyphosate of 0.5 mg/kg bw/day corresponds with a daily systemic concentration of 0.17 µg/mL or 1 µM when a 60 kg person with 36 L extracellular fluid is considered with a glyphosate oral bioavailability of 20%. The daily systemic dose of glyphosate on the day of application (i.e. highest exposure day), based on the geometric mean of 3.2 µg/L in urine, of glyphosate applicators in the US is approx. 0.0001 mg/kg bw/day (Acquavella, 2004¹⁴) which is 1000 times less than the systemic dose (0.1 mg/kg bw) corresponding with the ADI oral dose of 0.5 mg/kg bw with 20% oral bioavailability.

Many articles that have been considered relevant for the risk assessment of glyphosate and have been assessed for reliability on full text basis, contain experimental data as well on glyphosate as such as on formulations (different from MON 52276) and co-formulants. In such cases, only the toxicology data pertinent to glyphosate and to the reference formulation (if that can be clearly stated by the author of the article) are summarized and discussed. In the case of articles on exposure monitoring and epidemiology, exposure to glyphosate formulations are considered.

2.4.3 Categorization of “relevant” articles at full-text level

Articles that were not excluded in the detailed assessment (see **Chapter 2.4.1** and **2.4.2**) were categorized as recommended in the EFSA 2092 GD - EFSA Journal 2011;9(2):2092, Point 5.4.1.

- Category A** *Studies that provide data for establishing or refining risk assessment parameters. These studies should be summarised in detail following the subsequent steps of the OECD Guidance documents (OECD, 2005; 2006) and should be considered for reliability.*
- Category B** *Studies that are relevant to the data requirement, but in the opinion of the applicant provide only supplementary information that does not alter existing risk assessment parameters. A justification for such a decision should be provided.*
- Category C** *Studies for which relevance cannot be clearly determined. For each of these studies the applicants should provide an explanation of why the relevance of such studies could not be definitively determined.*

The list of Category A articles can be found in **Table 32** and **Table 33**. The list of Category B articles and the justifications can be found in **Table 34** and **Table 35**. The list of Category C articles and the explanations can be found in **Table 36** and **Table 37**.

All articles (and their translations) evaluated at full text level (detailed assessment) were submitted to the AGG in a Portable Document Format (PDF).

¹⁴ Acquavella J. F. *et al.* (2004), Environmental Health Perspectives, 112(3), 321-326.

2.5 Reliability assessment

For articles, which were identified, in the detailed assessment, as relevant articles of Category A (see **Chapter 2.4.3**) a reliability assessment was performed. The reliability criteria for each technical section are summarized in **Table 21 - Table 23**.

For relevant articles of Category A that were classified either as reliable (without restrictions) or reliable with restrictions, summaries were compiled.

Articles of Category A which were classified as non-reliable were downgraded to articles of Category B and justification for such a decision was provided.

Table 21: Reliability criteria for ecotoxicology, environmental fate and residues

Applied for	Reliability criteria
Ecotoxicology, Environmental Fate, Residues	For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines are met.
Ecotoxicology, Environmental Fate, Residues	(No) previous exposure to other chemicals is documented (where relevant).
Ecotoxicology	For aquatic studies, the test substance is dissolved in water or where a carrier is required, it is appropriate (non-toxic) and a carrier control / positive control is considered in the test design.
Environmental Fate, Residues	The test substance is dissolved in water or non-toxic solvent.
Ecotoxicology, Environmental Fate, Residues	Test item is sufficiently documented, and reported (i.e. purity, source, content, storage conditions).
Ecotoxicology	For tests including vertebrates, compliance of the batches used in toxicity studies compared to the technical specification.
Ecotoxicology	Species used in the experiment are clearly reported, including source, experimental conditions (where relevant): strain, adequate age/life stage, body weight, acclimatization, temperature, pH, oxygen (dissolved oxygen for aquatic tests) content, housing, light conditions, humidity (terrestrial species) incubation conditions, feeding.
Ecotoxicology	The validity criteria from relevant test guidelines can be extrapolated across different species but not necessarily across different test designs. If different, then the nature of the difference and impact should ideally be discussed.
Ecotoxicology, Environmental Fate, Residues	Only glyphosate or its metabolites is the test substance (excluding mixture), and information on application of the test substance is described.
Ecotoxicology, Environmental Fate, Residues	The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite).
Ecotoxicology, Environmental Fate, Residues	Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
Ecotoxicology, Environmental Fate, Residues	Analytical verifications performed in test media (concentration) / collected samples, stability of the test substance in test medium should be documented.

Applied for	Reliability criteria
Ecotoxicology	The test has been performed in several dose levels (at least 3) including a positive / negative control where relevant.
Ecotoxicology	Suitable exposure throughout the whole exposure period was demonstrated and reported.
Ecotoxicology	A clear concentration response relationship is reported – in studies where the dose response test design is employed.
Ecotoxicology	A sufficient number of animals per group to facilitate statistical analysis reported: mortality in control groups reported, observations/findings in positive/negative control clearly reported (where relevant).
Ecotoxicology, Environmental Fate, Residues	Assessment of the statistical power of the assay is possible with reported data.
Ecotoxicology, Environmental Fate, Residues	Statistical methodology is reported (e.g., checking the plots and confidence intervals).
Ecotoxicology	Description of the observations (including time-points), examinations, and analyses performed, with (where relevant) dissections being well documented.
Ecotoxicology	For terrestrial ecotoxicological studies in the laboratory or the field, the substrates used should be adequately described e.g. nature of substrate i.e. species of leaf or soil type.
Ecotoxicology, Environmental Fate, Residues	Field locations relevant / comparable to European conditions.
Ecotoxicology, Environmental Fate, Residues	Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon).
Ecotoxicology, Environmental Fate	Other soils where information on characterization by the parameters: pH, texture, CEC, organic carbon, bulk density, water holding capacity, microbial biomass.
Ecotoxicology, Environmental Fate, Residues	For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year.
Ecotoxicology, Environmental Fate	For soil samples, sampling from A-horizon, top 20 cm layers; soils freshly from field preferred (storage max 3 months at 4 +/- 2°C).
Ecotoxicology, Environmental Fate, Residues	Data on precipitation is recorded.
Environmental Fate	The temperature was in the range between 20-25°C and the moisture was reported.
Environmental Fate	The presence of glyphosate identified in samples were collected from European groundwater, soil, surface waters, sediments or air.
Ecotoxicology	For lab terrestrial studies, the temperature was appropriate to the species being tested and generally should fall within the range between 20-25°C and soil moisture / relative humidity was reported.
Ecotoxicology	For bee studies, temperature of the study should be appropriate to species.
Ecotoxicology	For lab aquatic studies:
	The source and / or composition of the media used should be described.
	The temperature of the water should be appropriate to the species being tested and generally fall within the 15-25°C.

Applied for	Reliability criteria
Ecotoxicology, Residues	The residue data can be linked to a clearly described GAP table, appropriate in the context of the renewal of approval of glyphosate (crop, application method, doses, intervals, PHI).
Ecotoxicology, Environmental Fate, Residues	Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate, and where relevant its metabolites.
Ecotoxicology, Environmental Fate, Residues	Analytical methods are clearly described; and adequate statement of specificity and sensitivity of the analytical methods is included.
Ecotoxicology	Assessment of the ECX for the width of the confidence interval around the median value; and the certainty on the level of protection offered by the median ECX is reported.
Environmental Fate	Radiolabel characterization: purity, specific activity, location of label is reported.
Environmental Fate	If degradation kinetics are included: data tables / model description / statistical parameters for kinetic fit to be provided.
Environmental Fate, Residues	Monitoring data: description of matrix analysed, and analytical methods to be fully described.
Environmental Fate	Clear description of application rate and relevance to approved uses.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 22: Reliability criteria for toxicology – epidemiology and exposure studies

Reliability criteria – toxicology	
Epidemiology studies	Exposure studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines/practices.	Study in accordance to valid internationally accepted testing guidelines/practices.
Study completely described and conducted following scientifically acceptable standards.	Study performed according to GLP.
	Study completely described and conducted following scientifically acceptable standards.
Test substance	Test substance
Exposure to formulations with only glyphosate as a.i.	Exposure to formulations with only glyphosate as a.i.
Exposure to formulations with glyphosate combined with other a.i.	Exposure to formulations with glyphosate combined with other a.i.
Exposure to various formulations of pesticides.	Exposure to various formulations of pesticides.
Study	Study
Study design – epidemiological method followed.	Study design clearly described.
Description of population investigated.	Population investigated sufficiently described.
Description of exposure circumstances.	Exposure circumstances sufficiently described.
Description of results.	Sampling scheme sufficiently documented.
Have confounding factors been considered.	Analytical method described in detail.
Statistical analysis.	Validation of analytical method reported.
	Monitoring results reported.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 23: Reliability criteria for toxicology – *in vitro* and *in vivo* studies

Reliability criteria – toxicology and metabolism	
<i>In vitro</i> studies	<i>In vivo</i> studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines.	Study in accordance to valid internationally accepted testing guidelines.
Study performed according to GLP.	Study performed according to GLP.
Study completely described and conducted following scientifically acceptable standards.	Study completely described and conducted following scientifically acceptable standards.
Test substance	Test substance
Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions).	Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions).
Only glyphosate acid or one of its salts is the tested substance.	Only glyphosate acid or one of its salts is the tested substance.
AMPA or other glyphosate metabolite is the tested substance.	AMPA or other glyphosate metabolite is the tested substance.
Study	Study
Test system clearly and completely described.	Test species clearly and completely described.
Test conditions clearly and completely described.	Test conditions clearly and completely described.
Metabolic activation system clearly and completely described.	Route and mode of administration described.
Test concentrations in physiologically acceptable range (< 1 mM).	Dose levels reported.
Cytotoxicity tests reported.	Number of animals used per dose level reported.
Positive and negative controls.	Method of analysis described for analysis test media.
Complete reporting of effects observed.	Validation of the analytical method.
Statistical methods described.	Analytical verifications of test media.
Historical negative and positive control data reported.	Complete reporting of effects observed.
Dose-effect relationship reported.	Statistical methods described.
	Historical control data of the laboratory reported.
	Dose-effect relationship reported.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

3 Search results

The full outcome of the literature search and evaluation is provided below.

Table 24: Summary of the literature search – all technical sections

	Number	Justification
Total number of articles retrieved from the search.	3297	n.a.
Total number of articles after removal of duplicates within all databases.	1781	n.a.
Total number of articles after manual removal of duplicates. ^{a)}	880	n.a.
Number of articles excluded after rapid assessment (title / abstract).	786	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	94	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	30	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	64	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	9	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 25: Results of the article selection process for ecotoxicology

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	133	n.a.
Number of articles excluded after rapid assessment (title / abstract).	107	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	26	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	10	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	16	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	3	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 26: Results of the article selection process for environmental fate

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	91	n.a.
Number of articles excluded after rapid assessment (title / abstract).	84	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	7	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	4	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	3	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	3	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 27: Results of the article selection process for residues

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	26	n.a.
Number of articles excluded after rapid assessment (title / abstract).	15	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	11	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	2	See Table 38
Number of articles not excluded after detailed assessment ^{b)}	9	See Table 32-Table 37
Number of summaries presented in the dossier ^{c)}	0	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 28: Results of the article selection process for toxicology

	Number	Justification
Total number of articles after manual removal of duplicates ^{a)}	117	n.a.
Number of articles excluded after rapid assessment (title / abstract).	67	See the Literature Review Excel File.
Total number of full-text documents assessed in detail	50	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	14	See Table 38
Number of articles not excluded after detailed assessment ^{b)}	36	See Table 32-Table 37
Number of summaries presented in the dossier ^{c)}	3	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 29: Results of the article selection process for analytical methods

	Number	Justification
Total number of articles after manual removal of duplicates ^{a)}	67	n.a.
Number of articles excluded after rapid assessment (title / abstract).	67	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 30: Results of the article selection process for efficacy / agronomy

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	372	n.a.
Number of articles excluded after rapid assessment (title / abstract).	372	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 31: Results of the article selection process for “other non-relevant categories”

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	74	n.a.
Number of articles excluded after rapid assessment (title / abstract).	74	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jul 2020 – Dec 2020) and entries found already in the previous searches (Jan 2010 – Jun 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 32: Relevant (category A) & reliable or reliable with restrictions articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
1	CA 5.8.3	Ferramosca A. et al.	2021	Herbicides glyphosate and glufosinate ammonium negatively affect human sperm mitochondria respiration efficiency.	Reproductive Toxicology (2021), Vol. 99, pp. 48-55	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
2	CA 5.9.4	Shrestha S. et al.	2020	Pesticide use and incident Parkinson's disease in a cohort of farmers and their spouses.	Environmental Research (2020), Vol. 191, Article No. 110186	The article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for this article is provided.
3	CA 5.9.4	Werder E. J. et al.	2020	Herbicide, fumigant, and fungicide use and breast cancer risk among farmers' wives.	Environmental Epidemiology (2020), Vol. 4, No. 3, Article No. e097	The article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for this article is provided.
4	CA 7.1.4.2	Albers C. N. et al.	2020	Leaching of herbicidal residues from gravel surfaces - A lysimeter-based study comparing gravels with agricultural topsoil.	Environmental pollution (2020), Vol. 266, Article No. 115225	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
5	CA 7.5	Papagiannaki D. et al.	2020	Effect of UV-A, UV-B and UV-C irradiation of glyphosate on photolysis and mitigation of aquatic toxicity.	Scientific Reports (2020), Vol. 10, No. 1, Article No. 20247	The article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for this article is provided.
6	CA 7.5	Tauchnitz N. et al.	2020	Assessment of pesticide inputs into surface waters by agricultural and urban sources - A case study in the Querme/Weida catchment, central Germany.	Environmental pollution (2020), Vol. 267, Article No. 115186	The article describes pesticide analyses, amongst them glyphosate, in surface waters and in soil samples within a German catchment area (CA 7.5). Additionally, batch adsorption (CA 7.1.3) and anaerobic soil degradation experiments (CA 7.1.1.2) were conducted. For CA 7.5, the article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for CA 7.5 is provided. For CA 7.1.1.2 and CA 7.1.2, refer to Table 34 and Table 35 (below). In order to complete the final statistics in this literature review report (see chapter <i>Summary</i> and <i>Search results</i>), the article has been allocated under Category A despite the outcome on CA 7.1.1.2 and CA 7.1.2.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
7	CA 8.2.2, CA 8.2.2.1, CP 10.2.2	Forner-Piquer I. et al.	2021	Differential impact of dose-range glyphosate on locomotor behavior, neuronal activity, glio-cerebrovascular structures, and transcript regulations in zebrafish larvae.	Chemosphere (2021), Vol. 267, Article No. 128986	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
8	CA 8.2.2, CP 10.2.2	Du-Carree J. L. et al.	2021	Impact of chronic exposure of rainbow trout, <i>Oncorhynchus mykiss</i> , to low doses of glyphosate or glyphosate-based herbicides.	Aquatic toxicology (2021), Vol. 230, Article No. 105687	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
9	CA 8.3.1.4, CP 10.3.1.5, CP 10.3.1.6	Odemer R. et al.	2020	Chronic High Glyphosate Exposure Delays Individual Worker Bee (<i>Apis mellifera</i> L.) Development under Field Conditions.	Insects (2020), Vol. 11, No. 10, Article No. 664	The article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for this article is provided.

Table 33: Relevant (category A) & reliable or reliable with restrictions articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
4	Albers C. N. et al.	CA 7.1.4.2	2020	Leaching of herbicidal residues from gravel surfaces - A lysimeter-based study comparing gravels with agricultural topsoil.	Environmental pollution (2020), Vol. 266, Article No. 115225	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
8	Du-Carree J. L. et al.	CA 8.2.2, CP 10.2.2	2021	Impact of chronic exposure of rainbow trout, <i>Oncorhynchus mykiss</i> , to low doses of glyphosate or glyphosate-based herbicides.	Aquatic toxicology (2021), Vol. 230, Article No. 105687	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
1	Ferramosca A. et al.	CA 5.8.3	2021	Herbicides glyphosate and glufosinate ammonium negatively affect human sperm mitochondria respiration efficiency.	Reproductive Toxicology (2021), Vol. 99, pp. 48-55	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
7	Fornier-Piquer I. et al.	CA 8.2.2, CA 8.2.2.1, CP 10.2.2	2021	Differential impact of dose-range glyphosate on locomotor behavior, neuronal activity, glio-cerebrovascular structures, and transcript regulations in zebrafish larvae.	Chemosphere (2021), Vol. 267, Article No. 128986	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
9	Odemer R. et al.	CA 8.3.1.4, CP 10.3.1.5, CP 10.3.1.6	2020	Chronic High Glyphosate Exposure Delays Individual Worker Bee (<i>Apis mellifera</i> L.) Development under Field Conditions.	Insects (2020), Vol. 11, No. 10, Article No. 664	The article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for this article is provided.
5	Papagiannaki D. et al.	CA 7.5	2020	Effect of UV-A, UV-B and UV-C irradiation of glyphosate on photolysis and mitigation of aquatic toxicity.	Scientific Reports (2020), Vol. 10, No. 1, Article No. 20247	The article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for this article is provided.
2	Shrestha S. et al.	CA 5.9.4	2020	Pesticide use and incident Parkinson's disease in a cohort of farmers and their spouses.	Environmental Research (2020), Vol. 191, Article No. 110186	The article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for this article is provided.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
6	Tauchnitz N. et al.	CA 7.5	2020	Assessment of pesticide inputs into surface waters by agricultural and urban sources - A case study in the Querne/Weida catchment, central Germany.	Environmental pollution (2020), Vol. 267, Article No. 115186	The article describes pesticide analyses, amongst them glyphosate, in surface waters and in soil samples within a German catchment area (CA 7.5). Additionally, batch adsorption (CA 7.1.3) and anaerobic soil degradation experiments (CA 7.1.1.2) were conducted. For CA 7.5, the article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for CA 7.5 is provided. For CA 7.1.1.2 and CA 7.1.2, refer to Table 34 and Table 35 (below). In order to complete the final statistics in this literature review report (see chapter <i>Summary</i> and <i>Search results</i>), the article has been allocated under Category A despite the outcome on CA 7.1.1.2 and CA 7.1.2.
3	Werder E. J. et al.	CA 5.9.4	2020	Herbicide, fumigant, and fungicide use and breast cancer risk among farmers' wives.	Environmental Epidemiology (2020), Vol. 4, No. 3, Article No. e097	The article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for this article is provided.

Table 34: Relevant but supplementary (category B) articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
10	CA 5.1	Faniband M. H. et al.	2021	Human experimental exposure to glyphosate and biomonitoring of young Swedish adults.	International journal of hygiene and environmental health (2021), Vol. 231, Art. No. 113657	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Article provides only supplementary information on kinetics of glyphosate in human volunteers but not altering risk assessment. No information on the test item and its source or purity. Only one dose level was tested and biomonitoring was restricted to urinary excretion.
11	CA 5.4, CA 5.5, CA 5.6	Skanes B. et al.	2021	Hazard assessment using an in-silico toxicity assessment of the transformation products of boscalid, pyraclostrobin, fenbuconazole and glyphosate generated by exposure to an advanced oxidative process.	Toxicology in vitro : an international journal published in association with BIBRA (2021), Vol. 70, Art. No. 105049	The article has been classified as relevant by full text - Category B and not reliable for the following reason: Article provides only supplementary information on in silico evaluation of genotoxicity, acute oral toxicity or carcinogenicity but not altering risk assessment. Only one type of software was used for each endpoint. Toxtree was used to address Cramer classification, Ames test, carcinogenicity / mutagenicity, DNA binding and micronucleus assay. Toxicity estimation software tool (TEST) was used to address developmental toxicity and the rat oral LD50. The toxicity evaluation based on single software was considered not robust enough.
12	CA 5.5	Crump K. et al.	2020	Correcting for Multiple Comparisons in Statistical Analysis of Animal Bioassay Data.	Toxicological Sciences (2020) Vol. 177, Issue 2, pp. 523-524	The article has been classified as relevant by full text - Category B for the following reason: In this letter to Editor Crump et al. (2021) commented on Rusyn et al. (<i>Questioning Existing Cancer Hazard Evaluation Standards in the Name of Statistics. Toxicol Sci. (2020), Vol. 177, Issue 2, pp. 521-522</i>) where Rusyn et al. comments on the original Crump et al. article (<i>Accounting for Multiple Comparisons in Statistical Analysis of the Extensive Bioassay Data on Glyphosate. Toxicol Sci. (2020) Vol. 175, Issue 2, pp. 156-167</i>). The original Crump et al. article was evaluated in the previous search and classified as relevant by full text (Category A and reliable without restrictions). The summary of the article was presented in the dossier under MCA 5.5./026. The appropriateness of the approach presented in the original article has been further reiterated in a Letter to the Editor (<i>Crump K. et al., Toxicological Sciences (2020), Vol. 177, Issue 2, pp. 523-524, Correcting for Multiple Comparisons in Statistical Analysis of Animal Bioassay Data</i>). Crump et al. replied to Rusyn et al. (<i>Questioning existing cancer hazard evaluation standards in the name of statistics. Toxicol Sci. (2020), Vol. 177, Issue 2, pp. 521-522</i>) and explain that the statistical method used in their analysis of the extensive bioassay data on glyphosate provides adequate interpretation of the p-values. They state that before a p-value can be interpreted appropriately, it must be correct, i.e., it must reflect the correct false positive rate for the hypothesis under consideration. The statistical method used in their analysis of the extensive bioassay data on glyphosate provides p-values that correct false positive rates by properly accounting for the multitude of tumours that require analysis by standard statistical methods. As the Letter to the Editor provides only supplementary information to the original Crump et al. article and does not alter risk assessment, the letter was

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						classified as relevant by full text but of Category B (relevant but supplementary).
13	CA 5.6, CA 5.8.3	Lorenz V. et al.	2020	Perinatal exposure to glyphosate or a glyphosate-based formulation disrupts hormonal and uterine milieu during the receptive state in rats.	Food and chemical toxicology (2020), Vol. 143, Art. No. 111560	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. The article is not reliable for the following reason: The study does not follow any OECD testing guideline, therefore the experimental design and procedures should be not only explained but validated against appropriate reference substances and the interpretation of the results should be supported by adequate historical control data that allow the correct interpretation of the relevance of a change. This is particularly true when assessing the biological relevance of hormonal changes and/or the assessed gene expression. In this publication such data are not provided. It is not clear why only 9 F1 females/group were selected to assess the effects on the pre-implantation phase and not a higher number to cover the basal hormonal variations observed, which should be high based on the scattered values observed in the control group of this study. The authors claim that there was an imbalance in the serum levels of estradiol 2 in relation to progesterone, but the progesterone values were apparently not impacted. Similarly, they claim that glyphosate induced significantly the ERα expression at protein level subepithelial stroma of the uteri (which was not observed in other parts of the uterus), although no changes were observed in ERα mRNA expression but do not take into consideration the inconsistency of their results. Similarly, they concluded that glyphosate provoked aberrant expression on implantation-genes although a consistent response was not observed among all the tested genes. The reproductive performance data of F1 females is not reported in a transparent way: only selected photos of the uterus are presented to indicate that there was a decrease in the number of implantation sites. However, the actual number of the implantation sites per animals are not reported. Similarly the number of corpora lutea, resorption sites and preimplantation loss are represented in graphics (figure 2A, B and C), but the actual number have not been given. So, the authors do not provide the reader of an objective information to understand whether an effect did occur. Overall, this publication presents several deficiencies and bias in reporting the results of their investigations and as such is considered to be not reliable.
14	CA 5.6.1	Milesi M. M. et al.	2020	Correction to: Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats (Correction to Archives of Toxicology (2019) 93:3635–3638).	Archives of Toxicology (2020), Vol. 94, No. 8, pp. 2897–2898	The article has been classified as relevant by full text - Category B for the following reason: This is a serie of comments and corrections connected to the article by Milesi et al. (<i>Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2018), Vol. 92, No. 8, pp. 2629-2643</i>). This article was evaluated in the previous search and classified as relevant by full text - Category B. In order to reflect the category of the main article, the correction was also classified as Category B. The correction corrects Table 1 of the publication, which lists factors associated with the pre-implantation loss rate and factors associated with feto-placental parameters of F2 offspring in control and glyphosate-based herbicide-treated female rats.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						The serie contains e.g. following articles, comments and corrections: Milesi et al., Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2018);92(8):2629-2643. Plewis, Comment on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2019);93(1):207. Milesi et al., Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2019);93(12):3635-3638. Paumgarten, Comment on Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats, Arch Toxicol 92:2629-2643 : On the impairment of female reproductive performance by developmental exposure to a glyphosate-based herbicide. Arch Toxicol. (2019);93(3):831-832. Plewis, Comment on response from Milesi et al. to Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2020);94(1):351-352. Milesi et al., Correction to: Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2020);94(8):2897-2898.
15	CA 5.6.2	Refaie A. A. et al.	2020	DNA and liver damage induced by glyphosate herbicide in suckling pups of wistar rat.	Current Topics in Toxicology (2020), Vol. 16, pp. 205-214	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The article is not reliable for the following reason: Storage conditions of test item not reported. Animal strain not further specified and age of dams not reported. No analysis of test item in solvent performed. Insufficient number of animals/group tested. It should be noted that the experimental unit for such an experimental design is the litter, not the individual pups. Therefore, statistical evaluations should have been conducted to compare across litters, where n = 2, affording only one degree of freedom for statistical comparisons.
16	CA 5.7	Coullery R. et al.	2020	Exposure to glyphosate during pregnancy induces neurobehavioral alterations and downregulation of Wnt5a-CaMKII pathway.	Reproductive toxicology (2020), Vol. 96, pp. 390-398	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Article provides useful information on neonates rats administered glyphosate after gestational exposure, but not altering risk assessment. In addition, IP injection is not a preferred route of administration for human exposure. Only 2 dose levels were tested and no information on the purity of glyphosate was reported. No analytical determinations performed. No historical control data provided. Lack of positive control and information allowing to assess the robustness of the investigations and results.
17	CA 5.7	Masood M. I. et al.	2020	Environment permissible concentrations of glyphosate in drinking water can influence the fate of neural	Environmental pollution (2020), Vol. 270, Art. No. 116179	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides only supplementary information on neurotoxicity (in vitro experiment), but does not alter risk assessment. The reporting on the test material is limited. Ca2+ uptake

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
				stem cells from the subventricular zone of the postnatal mouse.		was investigated at too high concentrations not relevant for assessment (> 1mM), but the remaining endpoints were investigated at suitable concentrations (< 1 mM). No positive or negative controls were included and historical control data were not provided.
18	CA 5.8.2	Babich R. et al.	2020	Kidney developmental effects of metal-herbicide mixtures: Implications for chronic kidney disease of unknown etiology.	Environment international (2020), Vol. 144, Art. No. 106019	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides only supplementary information on kidney effects of glyphosate and does not alter risk assessment. The purpose of the publication was to investigate the possible causes of chronic kidney disease of unknown etiology (CKDu) which is an emerging global concern affecting several agricultural communities in the Americas and South Asia. The hypothesis was that exposure to contaminants such as heavy metals (e.g., Cd, As, Pb, and V) and organic pesticides (e.g., glyphosate) present in the drinking water could provoke the onset and progression of this disease in childhood. Using zebrafish <i>Danio rerio</i>, a toxicology and kidney disease model, the authors examined kidney developmental effects of exposure to (i) environmentally derived samples from CKDu endemic and non-endemic regions and (ii) Cd, As, V, Pb, and glyphosate as individual compounds and in mixtures. The authors found that drinking water is contaminated with various organic chemicals including nephrotoxic compounds as well as heavy metals, but at levels considered safe for drinking. Histological studies and gene expression analyses examining markers of kidney development (pax2a) and kidney injury (kim1) showed novel metal and glyphosate-metal mixture specific effects on kidney development. Glyphosate showed that interactive nephrotoxic effects of organic agrochemicals and heavy metals are an important consideration. For example, glyphosate at 10 ppb can induce kim1, implying that exposure to this chemical even at very low-levels can contribute to kidney injury. They postulate that exposure to glyphosate coupled with individuals with impaired kidney development is likely to increase the initiation and progression of CKDu. However, gene expression data also suggest, when in a mixture with metals such as arsenic, glyphosate may have alternate effects on kidneys, including effects that may not be detrimental. Test system of the study is not clearly and completely described. Metabolic activation system is not clearly and completely described. Cytotoxicity tests are not reported. Only 1 dose level was used which does not allow a dose response analysis. Furthermore, no positive control and no HCD provided.
19	CA 5.8.2	Ghosh S. et al.	2020	Cardiogenic shock with first-degree heart block in a patient with glyphosate-surfactant poisoning.	Tropical doctor (2020): Ahead of print. 10.1177/0049475520971594	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper is a case report that describes the case of a 34-year-old man who developed corrosive injury to his GI tract after ingesting 200 mL of formulated glyphosate. He went on to develop hypotension and transient multiorgan failure including myocardial dysfunction which improved with intensive supportive care. This sequence of events is not unexpected in large ingestions of formulated glyphosate.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
20	CA 5.8.2	Hao J. Y. et al.	2020	Glyphosate-induced Delayed Pyloric Obstruction, Ulcer and Scar Changes.	Journal of the College of Physicians and Surgeons-Pakistan (2020), Vol. 30, No. 8, pp. 868-870	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper describes a case report of a 44-year-old woman who presented with pyloric obstruction two months after accidentally ingesting 100 mL of formulated glyphosate. After the initial ingestion, her family took her to the hospital where the patient was treated for 13 days and then discharged. She later returned to the hospital with recurrent nausea & vomiting, underwent endoscopy where they discovered scarring and pyloric obstruction. The patient underwent a partial gastrectomy and gastrojejunostomy with improvement of symptoms. This clinical course of events is not unexpected in significant ingestions of formulated glyphosate as these ingestions are corrosive and can cause scarring & gastric outlet obstruction.
21	CA 5.8.2	Kimura T. et al.	2020	Renal tubular injury by glyphosate-based herbicide.	Clinical and experimental nephrology (2020), Vol. 24, No. 12, pp. 1186	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This is a case report with an image showing proximal tubular epithelial injury in a 78-year-old woman who ingested formulated glyphosate in a suicide attempt. This ingestion resulted in transient renal failure which improved with hemodialysis. This is not unexpected in large suicidal ingestions.
22	CA 5.8.2	Nayak S. et al.	2020	Deliberate self-poisoning in south odisha: study of its clinical profile and outcome.	Asian Journal of Pharmaceutical and Clinical Research (2020), Vol. 13, No. 8, pp. 169-173	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper aimed to characterize the nature of self-poisoning in the Odisha region of India. Over a 2-year period they evaluated 200 patients who presented to the Maharaja Krishna Medical College and found that 149 (74.5%) patients had ingested pesticides. 10 patients ingested glyphosate. 9 developed nausea & vomiting, 2 developed corrosive injury to their GI tracts, 2 had pneumonitis likely due to aspiration, 2 developed hypotension, 2 had altered mental status, 2 developed dysrhythmias, 3 had dysphagia, 3 had dehydration & 2 died. There was certainly overlap in the clinical picture as there are more symptoms described than patients. The symptoms described are not unexpected as large ingestions of formulated glyphosate causes corrosive injury to the GI tract and subsequent hypotension & multiorgan failure.
23	CA 5.8.2	Ren Y. et al.	2020	Case report of pyloric obstruction caused by glyphosate herbicides.	Acta Medica Mediterranea (2020), Vol. 36, No. 6, pp. 3485-3488	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper is a case series describing 3 patients with formulated glyphosate ingestions. The authors describe pyloric obstruction and laryngeal scarring in the patients. Formulated glyphosate is caustic to the GI tract and airways so this clinical scenario is not unexpected.
24	CA 5.8.2	Shin J. et al.	2020	Severe chemical burns related to dermal exposure to herbicide containing glyphosate and glufosinate with surfactant in Korea.	Annals of occupational and environmental medicine (2020), Vol. 32, Art. No. e28	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This article is a case report detailing an injury sustained by a farmer who was reportedly spraying a glyphosate/glufosinate herbicide formulation, spilled the contents of his back pack on his right shoulder & hip, did not wash the formulation off and presented 3 days after with rapidly progressive necrotizing wounds that have a necrotizing fasciitis appearance in the photos. Unfortunately,

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						the patient succumbed to his injuries. These herbicides are not corrosive to the skin in this fashion, it is impossible to tell what the farmer was exposed to in this scenario as infectious processes can result in a very similar clinical appearance. This is completely atypical and should not be associated with glyphosate exposure.
25	CA 5.8.2	Stajniko A. et al.	2020	Seasonal glyphosate and AMPA levels in urine of children and adolescents living in rural regions of Northeastern Slovenia.	Environment international (2020), Vol. 143, Art. No. 105985	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper aimed to measure glyphosate and AMPA exposure in children & adolescents in Slovenian agricultural areas. They measured 1st morning urines in the 246 participants in the winter and again in 225 participants in the summer. They addressed the fact that the detection of AMPA could come from other detergent exposures and not from glyphosate alone. 221 blood samples were also drawn in the first sampling period. They detected glyphosate in 27% of the urine samples from the winter and 22% in the summer. Their data demonstrate much lower glyphosate concentrations than reported in other parts of the world. A large percentage of the children had concentrations less than the LOQ with 72% of the younger children & 74% of the older children testing below the LOQ in the first sampling period, and 79% of the younger & 76 % of the older testing below the LOQ in the 2nd period. The estimated systemic dose of glyphosate was 0.003 mcg/kg of body weight – significantly below the ADI of 0.1 mg/kg of body weight. This article supports the evidence that glyphosate exposures tend to be very low and don't pose a health risk.
26	CA 5.8.2	Xiao L. et al.	2021	A 9-year retrospective study of poisoning-related deaths in Southwest China (Sichuan).	Forensic Science International (2021): Ahead of Print 10.1016/j.forsciint.2020.110558	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper describes retrospective study evaluating 782 poisoning deaths in Sichuan Province, China. The deaths were characterized as accidental, suicidal or homicidal. Pesticide ingestion was responsible for 40% of deaths. Only 2 deaths were related to glyphosate formulations and no details were given about the cases.
27	CA 5.8.3	Abdel-Halim K. Y. et al.	2020	Cytotoxicity and Oxidative Stress Responses of Imidacloprid and Glyphosate in Human Prostate Epithelial WPM-Y.1 Cell Line.	Journal of Toxicology (2020), Vol. 2020, Art. No. 4364650	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides only supplementary information on cytotoxicity of glyphosate on prostate cells that does not alter risk assessment. The ability of glyphosate to induce in vitro cytotoxic and oxidative stress on normal human cells (prostate epithelial WPM-Y.1 cell line) was evaluated with the methyl tetrazolium test (MTT) and histopathological investigation. Cell viability was evaluated with an MTT test for 24 h. The median inhibition concentration (IC50) value was 0.025 mM for glyphosate. At low concentrations (mM), the examined pesticides significantly reduced cell viability and caused cell death. Coupling of cell viability, oxidative stress, and histopathological alterations provides good tools to assess the cytotoxicity of pesticides in vitro at low concentrations. Moreover, the abnormal damage of cell structure is considered an important signal of organ dysfunction. Metabolic activation system was not clearly and completely described. No HCD and no positive or negative control were reported.

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28	CA 5.8.3	Ben Maamar M. et al.	2020	Epigenome-wide association study for glyphosate induced transgenerational sperm DNA methylation and histone retention epigenetic biomarkers for disease.	Epigenetics (2020); Ahead of print. 10.1080/15592294.2020.1853319	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article provides only supplementary information on epigenetic effects of glyphosate and does not alter risk assessment. The current study was designed to identify epigenetic biomarkers for glyphosate-induced transgenerational diseases using an epigenome-wide association study (EWAS). Following transient glyphosate exposure of gestating female rats (F0 generation), during the developmental period of gonadal sex determination, the subsequent transgenerational F3 generation, with no direct exposure, were aged to 1 year and animals with specific pathologies identified. The pathologies investigated included prostate disease, kidney disease, obesity, and presence of multiple disease. The sperm were collected from the glyphosate lineage males with only an individual disease and used to identify specific differential DNA methylation regions (DMRs) and the differential histone retention sites (DHRs) associated with that pathology. Unique signatures of DMRs and DHRs for each pathology were identified for the specific diseases. However, a comparison of DMRs and DHRs of the glyphosate treated animals versus the control animals was not performed. It is not clear what has been actually tested. Test conditions are not clearly and completely described. Only one dose level was reported / no dose-response relationship. Number of animals used per dose level not reported. Method of analysis was not described for analysis test media (no validation, no verifications). Furthermore, no HCD reported, and no positive controls.
29	CA 5.8.3	Diers S. et al.	2020	Does glyphosate affect the in vitro maturation and further development of bovine oocytes? Original Title: Beeinflusst Glyphosat die In-vitro-Maturation und weitere Entwicklung boviner Oozyten?	Zuechtungskunde (2020), Vol. 92, No. 4, pp. 223-235	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on endocrine disruption, but not altering risk assessment. It is difficult to be interpreted because no HCD and no positive controls were used. The data requirement for endocrine disruption is not met, since neither mode of action nor ED properties are sufficiently shown due to no dose-response relationship for gene induction. In addition, the product used in the study is not sufficiently identified, the test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. It is therefore not possible to confirm whether the product used, is the representative glyphosate formulation MON 52276 relevant for the glyphosate EU renewal and whether the product contained POEA or not.
30	CA 5.8.3	Ganesan S. et al.	2020	Ovarian mitochondrial and oxidative stress proteins are altered by glyphosate exposure in mice.	Toxicology and applied pharmacology (2020), Vol. 402, Art. No. 115116	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This publication does not alter risk assessment negatively, since no (major) effects were found with any of the tested read outs. However, it could be used - with restrictions - as supporting evidence for lack of any effects of test item on liver, heart, spleen, kidney or uterine weight, AKT or gamma-H2AX protein abundance, or the ovarian level of steroidogenic proteins, or on estrous cyclicity and circulating E2 or P4. The study was performed following scientifically acceptable standards. However, reliability is given with restrictions since details on test item (e.g. purity), historical control data, positive controls and analysis of test media are missing.

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31	CA 5.8.3	Ingaramo P. et al.	2020	Are glyphosate and glyphosate-based herbicides endocrine disruptors that alter female fertility?	Molecular and cellular endocrinology (2020), Vol. 518, Art. No. 110934	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. The review article selectively reports results of in vitro and in vivo studies suggesting endocrine disrupting properties of glyphosate and glyphosate-based herbicides at low or “environmentally relevant” dose levels in the female reproductive tissue. Most of the studies focused on the endocrine-disrupting effects of glyphosate in endocrine-dependent tissues (ovary and uterus). The authors claim that most of these studies show effects at very low concentrations, which would be undetected in traditional toxicology studies. However, they did not adequately explain the design of the experiments, address potential confounders in the cited studies (e.g., overt and systemic toxicity, cytotoxicity) that impact the studies validity to inform an endocrine assessment, nor the reasons why the reported investigations can detect effects that the comprehensive database of regulatory toxicity studies for glyphosate were not able to ascertain. The most significant flaw with this review was the omission of numerous reliable and relevant published in vitro and in vivo studies, and publicly available regulatory assessments, that are critical to inform a weight of evidence assessment for glyphosate and GBHs. The missing information was largely included in the recent 2017 EFSA Glyphosate ED weight of evidence evaluation where it was concluded that glyphosate is not an endocrine disruptor. Figure 1 proposes mechanisms of endocrine disruption that include impact on aromatase activity, estrogenic effects through a ligand-independent mechanism, cell proliferation, and expression of oestrogen-dependent proteins. It was concluded in the recent 2015 USEPA and 2017 EFSA weight of evidence ED assessments that glyphosate does not impact steroidogenesis including aromatase activity. Findings in the articles cited in figure 1 for aromatase activity are confounded by non-specific effects of supraphysiological concentrations of the surfactant in these formulations in in vitro or in vivo systems. There is no evidence of glyphosate impacting aromatase expression or activity by assessing apical endpoints in the comprehensive toxicology database for glyphosate (for review see Levine et al. 2020). Figure 1 also purports that glyphosate is a ligand for the oestrogen receptor. It has been well established that glyphosate is not a ligand for the oestrogen receptor and does not transactivate the oestrogen responsive genes endpoints (for a comprehensive review of the oestrogen pathway see Levine et al. 2020). The paper cited in figure 1 to support a ligand-independent mechanism by Mesnage et al. 2017 was reported to only occur at the unrealistic exposure concentration of 20,000 mg glyphosate a.e./L (118 µm) and by activating protein kinase A that increases the phosphorylation and activation of the oestrogen receptor. Mesnage et al. did not provide evidence in their paper that the phosphorylation status of the oestrogen receptor was changed to support their hypothesis nor is this hypothesis consistent with the weight of evidence from validate functional assays. Figure 1 also proposes that glyphosate can cause cell proliferation through and endocrine mechanism. This hypothesis is inconsistent

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						with results of the comprehensive database of glyphosate toxicology studies. The key citation that support this hypothesis is by Thongprakaisang et al. 2013. Mesnage et al. 2017 concluded the results in Thongprakaisang et al. 2013 likely result from contamination and not glyphosate. An earlier study that reported modest proliferation by glyphosate only occurred at the extremely high concentration of 1000 µM and the authors concluded that the modest proliferation observed in their study resulted from a non-endocrine mechanism (Lin and Garry, 2000). The final endocrine mechanism described in figure 1 refers to expression of oestrogen-dependent proteins. The significance of these findings is questionable based on the results of the endocrine screening battery reviewed by EFSA in 2017 and the comprehensive regulatory toxicology database for glyphosate. The authors, however, recognize that it was not possible to reproduce in vivo most of the effects of glyphosate and/or GBHs observed in vitro. They claim this could be due that the species tested are not the appropriate ones and claimed that the sheep constitute a highly appropriate model to evaluate the effects of EDCs due to the similarity between sheep and humans, especially regarding gestational and thyroid physiologies and brain ontogeny. However, robust data supporting this assumption are limited.
32	CA 5.8.3	Levine S. L. et al.	2020	Review and analysis of the potential for glyphosate to interact with the estrogen, androgen and thyroid pathways. Special Issue: Glyphosate exposure and toxicology.	Pest Management Science (2020), Vol. 76, No. 9, pp. 2886-2906	The article has been classified as relevant by full text - Category B for the following reason: The article is a review article providing a good summary and also further analysis on possible endocrine disrupting properties of glyphosate in USEPAs endocrine disruptor screening program (EDSP) and further literature but does not alter risk assessment.
33	CA 5.8.3	Munoz J. P. et al.	2020	Glyphosate and the key characteristics of an endocrine disruptor: A review.	Chemosphere (2020): Ahead of print. doi.org/10.1016/j.chemosphere.2020.128619	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . Munoz et al. based on the ten key characteristics (KC) of Endocrine Disrupting Chemicals (EDCs) recently proposed (La Merrill et al., 2020) reviewed a selective set of publications related to glyphosate as a possible endocrine disruptor. The authors claim that glyphosate exhibited eight of the ten KCs of an EDC. This checklist of KC was not created in conjunction with nor is it recognised by any regulatory agency as a replacement for established weight of evidence approaches used by regulatory agencies to assess whether a compound is an endocrine disruptor. The authors did not perform a systematic review for glyphosate of the publicly available information resulting in a significant flaw with this publication, the omission of numerous reliable and relevant published in vitro and in vivo studies, and publicly available regulatory assessments, that are critical to inform a weight of evidence assessment for glyphosate. Glyphosate has undergone extensive regulatory testing and assessment to evaluate its potential to be an endocrine disruptor. In 2015 the US EPA released its weight of evidence evaluation of glyphosate and more recently the European Food Safety Authority in 2017, who

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						independently performed an endocrine assessment as part the of the glyphosate renewal process. Both agencies concluded based on the US EPA EDSP battery and all other scientifically relevant information that glyphosate does not interact with the oestrogen, androgen thyroid and steroidogenic pathways and concluded that glyphosate is not an endocrine disruptor. Furthermore, the cited studies in Munoz et al. 2020 were not critically evaluated for relevance and reliability nor evaluated with a weight of evidence to conclude whether the criteria for each key characteristic was met. The authors state “ <i>Here, we conduct a comprehensive review where we describe the most important findings of the glyphosate effects in the endocrine system and assess the mechanistic evidence to classify it as and EDC</i> ”. However, many of the studies the authors cite as evidence for glyphosate meeting one of the KC they used studies that were conducted with a glyphosate-based formulation only. The authors generally focused on a small subset of papers that used non-standard in vitro methods that tested glyphosate-based formulations at unrealistically high levels and in vivo studies that don’t follow international guidelines. These papers inflate the relevance of findings derived from their in vitro models to the in vivo situation and invariably fail to discuss or recognize confounding effects of the formulation. As a result, these papers are not considered to be reliable for an endocrine assessment.
34	CA 5.8.3	Toth G. et al.	2020	Cytotoxicity and hormonal activity of glyphosate-based herbicides.	Environmental pollution (2020), Vol. 265, No. Pt B, Art. No. 115027	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This article provides only supplementary information for risk assessment, since the in vitro experiments were performed with yeast instead of human cells. Nevertheless, the findings showed, that neither glyphosate nor AMPA impaired estrogenic or androgenic activity in the test system. Purity and storage conditions of test items and historical control data not reported. Positive controls applied, but data not shown. This study claims that POEA and some glyphosate-based formulations are estrogenic and/or androgenic. However, the study does not provide reliable information that POEA or any of the tested formulations are estrogenic and/or androgenic. The results claiming estrogenicity and/or androgenicity of the formulations are not in agreement with what would be predicted based on chemical structures of the surfactants and are apparently confounded by cytotoxicity based on responses presented within the paper. Because of the surface-active properties (i.e. surfactant properties) of POEA and other surfactants, it is very difficult to generate interpretable results from in vitro or cell-based assays, like the yeast assay, with surfactants. Rather, conclusions of estrogenicity and androgenicity should be based on in vivo studies. Even if the activity levels claiming estrogenic or androgenic activity are taken at face value, their potency for the estrogen and androgen receptors is so low these responses are not considered biologically relevant and realistic exposures to these substances are far below reported effect levels in the paper.
35	CA 5.8.3	Zhang C. et al.	2020	Molecular Basis for Endocrine Disruption by	International journal of environmental research and	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article provides only supplementary

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				Pesticides Targeting Aromatase and Estrogen Receptor.	public health (2020), Vol. 17, No. 16, Art. No. 5664	information on in vitro data and binding information gained by in silico models but not altering risk assessment. Limited information on test material (batch, analytical purity) provided. Historical control data were not included. The reported inhibition of aromatase activity (up to 30% at 100 µM glyphosate acid) is likely related to using ethanol or DMSO as a solvent for glyphosate, rather than water or buffer. Glyphosate is not soluble in an organic solvent, like ethanol or DMSO, and this likely confounded the results of the assay because glyphosate was not fully solubilized. Zhang et al. used recombinant CYP19 at low protein levels in the assay and did not add a “buffering protein” like BSA, which made the aromatase enzyme, and its associated reductase, susceptible to denaturation. Consistent with denaturing the aromatase enzyme, the slope of the inhibition curve was extremely shallow, uncharacteristic of aromatase inhibition, and likely reflects confounding effects of undissolved test substance. In the USEPA’s test guideline for aromatase activity, activity of < 25% is considered negative and activity between 25% and < 50% is considered equivocal. Greater than 50% inhibition must be estimated for a substance to be considered positive in EPA’s guideline study.
36	CA 5.8.3	Zhang J. et al.	2021	Melatonin alleviates the deterioration of oocytes and hormonal disorders from mice subjected to glyphosate.	Molecular and cellular endocrinology (2021), Vol. 520, Art. No. 111073	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The publication investigates whether melatonin can improve reproductive defects caused by glyphosate. No new information on glyphosate toxicity is provided and the article does not alter risk assessment. There is a limited information on test material provided (no information on source, batch or purity), limited information on test animals (no information on housing, environmental conditions or weight), no historical control data provided.
37	CA 5.8.3	Fu H. et al.	2020	Effects of glyphosate-based herbicide-contaminated diets on reproductive organ toxicity and hypothalamic-pituitary-ovarian axis hormones in weaned piglets.	Environmental pollution (2020): Ahead of print. doi.org/10.1016/j.envpol.2020.115596	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The article is not reliable for the following reason: The study did not follow any OECD guideline and was not performed under GLP conditions. No analytical verifications of the test item in the diet were performed. In addition, there was no information on food consumption reported, therefore the actual intake of glyphosate by the animals remains unclear. The piglet tested in the study is an animal species that is not routinely used to investigate reproductive performances. The authors did not provide information on the sexual maturation in the tested strain which would have helped in the interpretation of parameters like the hormone levels and histopathology of the uterus and in the ovaries. Overall, for piglets that have been used in the recent years for investigation on potential effects on reproductive toxicity induced by a xenobiotic, it has been reported that in sexually immature animals a reliable histopathological and functional evaluation of possible test item-related effects on the female reproductive organs is not possible (1-4). In this study hormonal analyses has been performed only once at sacrifice when for reliable interpretation of the data, hormonal analysis should have been taken more times on the same animal (ideally before the treatment) and the time of sampling should be recorded. Therefore, the reliability of the hormonal data in this study is also

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						questionable. In conclusion, the study presents many deficiencies and does not meet the basic scientific principles for this type of investigation and is it considered not to be reliable.
38	CA 5.8.3, CP 7.1.7	Spinaci M. et al.	2020	Glyphosate and its formulation Roundup impair pig oocyte maturation.	Scientific reports (2020), Vol. 10, No. 1, Art. No. 12007	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides only supplementary information on maturation, steroidogenesis and oxidative stress markers of cumulus-oocyte complexes (COCs) from pigs, but not altering risk assessment. In addition, effects were mainly found at unphysiologically high doses (> 1 mM). The purity and storage conditions of the test item were not reported. No cytotoxicity testing performed, no positive and truly negative controls performed and also no historical control data provided. No metabolic activation system applied.
39	CA 6.10.1	de Souza Ferreira; A. P. et al.	2020	Glyphosate and aminomethylphosphonic acid (AMPA) residues in Brazilian honey.	Food Additives & Contaminants, Part B: Surveillance (2020): Ahead of Print doi.org/10.1080/19393210.2020.1855676	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Glyphosate residues were found in Brazilian honey (HR = 0.22 mg/kg). An AMPA residue of 0.1 mg/kg was detected in one sample. The residue levels found in the analysed samples are not directly relevant to the EU uses supported in the AIR dossier. However, the data may be useful to interpret the results of the EU monitoring data for glyphosate residues in honey. Therefore, they are considered as category B (supplementary information). The publication is reliable in most points, however origin of samples is not described in full detail.
40	CA 6.10.1	Panseri S. et al.	2020	Pesticides and Environmental Contaminants in Organic Honeys According to Their Different Productive Areas toward Food Safety Protection.	Foods (2020), Vol. 9, No. 12	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, not altering risk assessment. Monitoring data from organic honey samples (n = 98) collected in Italy (Apulia) during 2019-2020. Residues of glyphosate, AMPA and glufosinate were not found in any sample. References are provided to validation of analytical methods. Source of honey samples are not exactly described.
41	CA 6.10.1	Petcu C. D. et al.	2020	Study regarding the honey contamination degree assessed in a specialized production unit.	Scientific Papers, Series D. Animal Science (2020), Vol. 63, No. 1, pp. 442-449	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, not altering risk assessment. Samples from "honey sourced from beekeepers from the centre and Southern Romania (in order to form a large and homogeneous batch)" were analysed. Analysis done by LC-MS/MS with poor method description and no validation data. Residues of glyphosate were below the limit of quantification (<0.01 mg/kg) in 15 acacia and 15 polyfloral honey samples.
42	CA 6.10.1	Yaqub G. et al.	2020	Monitoring and risk assessment due to presence of metals and pesticides residues in honey samples from the major honey producing forest belts and different brands.	Food Science and Technology (2020), Vol. 40, No. Suppl. 1, pp. 331-335	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: 25 samples of different national (Pakistan) and international honey brands were collected for analysis of residues of heavy metals and pesticides. Glyphosate residues were detected in 5 samples in a range of 0.44 - 3.5 mg/kg (ppm). The residue levels found in the analysed samples are not directly relevant to the EU uses supported in the AIR dossier. However, the data may be useful to interpret the results of the EU monitoring data for glyphosate residues in honey. Therefore, they are considered as category B (supplementary information). The publication is reliable, but with several restrictions, i.e. missing validation data, analytical method and origin of samples

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						are not sufficiently described.
43	CA 6.3	Gomez-Ramos M. d. M. et al.	2020	Pesticide residues evaluation of organic crops. A critical appraisal.	Food Chemistry: X 5 (2020), Art. No. 100079	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, not altering risk assessment. Analytical method development and optimisation for detection of multiple pesticides in crops with low LOQ. Monitoring data from 136 commercial organic samples showed no residues of glyphosate, n-acetyl glyphosate, AMPA, n-acetyl-AMPA. Origin of samples not fully described. For method validation it is relied on published data.
44	CA 6.3	Khan N. et al.	2020	Assessment of Health Risk due to Pesticide Residues in Fruits, Vegetables, Soil, and Water.	Journal of Chemistry (2020), Vol. 2020, Art. No. 5497952	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, does not alter risk assessment. Fruit, vegetable, soil and water samples from Pakistan were analysed for glyphosate residues (monitoring), with detects in fruits and vegetables. Missing validation data, analytical method and origin of samples not sufficiently described.
45	CA 6.3	Lozowicka B. et al.	2019	Pesticide residues in seeds of winter oilseed rape (Brassica napus L.).	Progress in Plant Protection (2019), Vol. 59, No. 4, pp. 199-205	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, not altering risk assessment. Monitoring data from OSR samples collected in Poland during 2016-2019. Glyphosate residues found in 14% of samples (max 0.27 mg/kg). Analytical method not fully described, origin of samples not fully described.
46	CA 6.5.3	Tittlemier S. A. et al.	2020	Fate of glyphosate in wheat during milling and bread production.	Cereal Chemistry (2020): Ahead of Print DOI: 10.1002/cche.10369	The article has been classified relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only. No endpoint is derived. The study does not alter risk assessment. This study is considered supportive for processing of wheat, however no clear processing factors can be derived. Absence of validation data in different processed wheat matrices. For the analytical method it is referred to another publication (Tittlemier et al., 2017).
47	CA 6.9	Solomon K. R.	2020	Estimated exposure to glyphosate in humans via environmental, occupational, and dietary pathways: an updated review of the scientific literature. Special Issue: Glyphosate exposure and toxicology.	Pest Management Science (2020), Vol. 76, No. 9, pp. 2878-2885	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: The article provides only supplemental information, which does not alter risk assessment. No endpoint was derived. Extended risk assessment using published exposure data for air, water, bystanders, the general public, domesticated animals, pets, and applicators. Based on this large dataset, no risk to any exposure pathway/group was identified. The article is reliable with respect to risk assessment methodologies applied, i.e. well described methodologies and data set for analysis.
6	CA 7.1.3, CA 7.1.1.2	Tauchnitz N. et al.	2020	Assessment of pesticide inputs into surface waters by agricultural and urban sources - A case study in the Querne/Weida catchment, central Germany.	Environmental pollution (2020), Vol. 267, Art. No. 115186	The article describes pesticide analyses, amongst them glyphosate, in surface waters and in soil samples within a German catchment area (CA 7.5). Additionally, batch adsorption (CA 7.1.3) and anaerobic soil degradation experiments (CA 7.1.1.2) were conducted. For CA 7.5, the article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for CA 7.5 is provided. Please refer to Tables 32 and 33 above. For CA 7.1.1.2 and CA 7.1.2, see below.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability for CA 7.1.1.2 and CA 7.1.3 for the following reason: CA 7.1.1.2: For the anaerobic degradation experiment, the methods are well described, however the experimental design is not in agreement with the relevant guideline (OECD 307), e.g. due to use of synthetic rainwater, insufficient information on the test concentrations, use of slurry of a liquid-solid ratio of 0.3:1, air-tight incubation and analysis of pore water, only. From the information provided, it cannot be concluded on the representativeness of the soils used. Further, besides the final half-live, no detailed results are reported. Thus, no conclusion can be made on the quality of the results. The results from the anaerobic degradation experiment are therefore considered not reliable. CA 7.1.3: For the batch adsorption experiment, the methods are well described, however the experimental design is not in agreement with the relevant guideline (OECD 106), e.g. due to use of synthetic rainwater instead of CaCl₂ solution, insufficient information on the test concentrations and a temperature of 10 °C. From the information provided, it cannot be concluded on the representativeness of the soils used. Further, besides the final adsorption parameters, no detailed results are reported. Thus, no conclusion can be made on the quality of the results. The adsorption results are therefore considered not reliable.
48	CA 8.1.4, CP 10.1.3	Cuzziol Boccioni A. P. et al.	2020	Toxicity assessment at different experimental scenarios with glyphosate, chlorpyrifos and antibiotics in <i>Rhinella arenarum</i> (Anura: Bufonidae) tadpoles.	Chemosphere (2020), Art. No. 128475, Ahead of print. doi.org/10.1016/j.chemosphere.2020.128475	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not alter risk assessment but the findings of the work could serve to discuss the sublethal effects (biological, morphological and enzymatic parameters) of two different glyphosate concentrations (1.25 and 2.5 mg/L) to tadpoles of an amphibian species as part of a broader weight of evidence. An endpoint cannot be derived. No analytical verifications of the test item concentrations are provided. Surface egg strings of <i>R. arenarum</i> used for the experiments were collected from temporary small ponds situated in the natural floodplain of the Parana River, considered as an unpolluted site (no analytical verification was however made). Only two concentrations were tested.
49	CA 8.2.4.2, CP 10.2.1	Asnicar D. et al.	2020	Effects of Glyphosate-Based and Derived Products on Sea Urchin Larval Development.	JOURNAL OF MARINE SCIENCE AND ENGINEERING (2020), Vol. 8, No. 9, Art. No. 661	The article has been classified as relevant by full text - Category B and not reliable for the following reason: Provides information on the effects of glyphosate, AMPA and Roundup on the larval development of sea urchins but no risk assessment relevant endpoints are given. The study does not alter risk assessment. The purity of glyphosate and AMPA are not provided. The urchins were collected from the open environment and could have been exposed previously to pesticides. The experimental conditions are inadequately described (it is unclear if oxygen saturation > 80% applies to all treatment or just for respiration rate treatment). Light conditions are not reported. No validation data or analytical verifications are provided. No Ec ₅₀ assessment was conducted.
50	CA 8.2.6.1, CA 8.2.7,	Tajnaiova L. et al.	2020	Determination of the Ecotoxicity of Herbicides	Plants-Basel (2020), Vol. 9, No. 9, Article No. 1203	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This study investigates the effect of

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
	CP 10.2.1			Roundup (R) Classic Pro and Garlon New in Aquatic and Terrestrial Environments.		Roundup® Classic Pro (not relevant for the AIR5, as it contains the additive surfactant ether alkylamine ethoxylate) and AMPA on the aquatic organisms duckweed Lemna minor and green algae Desmodium subspicatus and on the enzymatic activity of soil. The endpoints for AMPA do not alter risk assessment but are supportive of low exposure risk (relevant growth inhibition endpoints obtained for both green algae and macrophytes: Desmodium subspicatus (green alga): 72 h AMPA IC50 = 117.8 mg/L; 72 h AMPA IC50 with pH adjusted solution = 192.1 mg/L). No analytical verifications of the test item concentrations in the medium were conducted. The experimental design was carried out according to the following standards: EN ISO 8692 (Water Quality-Fresh Water Algal Growth Inhibition Test with Unicellular Green Algae (ISO 8692:2012)) and EN ISO 20079 (Water Quality-Determination of the Toxic Effect of Water Constituents and Waste Water on Duckweed (Lemna minor)-Duckweed Growth Inhibition Test (ISO 20079:2005)). Only the IC50 assessment was performed. There is no analytical to confirm exposure. Results are also ambiguous in that % inhibition plots are presented but data presented is unknown (rate or biomass or cell density?).
51	CA 8.3.1.1.2, CA 8.3.1.4, CP 10.3.1.1.2, CP 10.3.1.4, CP 10.3.1.6	Motta E. V. S. et al.	2020	Oral or Topical Exposure to Glyphosate in Herbicide Formulation Impacts the Gut Microbiota and Survival Rates of Honey Bees.	Applied and environmental microbiology (2020), Vol. 86, No. 18	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: No proper endpoints are provided (only acute toxicity at 24h). The study does not alter risk assessment, but the findings of the work could serve to support the acute contact toxicity to bees and further sub-lethal effects of glyphosate (mortality) on honey bees as part of a broader discussion. Both laboratory and field experiments were conducted. The study is focused on the effects of glyphosate on bee gut microbiota. The glyphosate standard tested item is not fully described. No analytical verifications of the test item concentrations in the medium were conducted. Study is not compliant with any accepted guideline and therefore validity criteria cannot be assessed. Glyphosate was tested topically at different concentrations and only EC50 assessment (at 24 h instead of at 48 h as recommended by the guidance) was performed. A dose-response effect was observed in several parameters studied (not only mortality). For the field experiments, there is no security that the bees haven't been exposed to pesticides before the tests started. Findings cannot be related directly to impacts at the population level therefore influence on direct level and indirect assessment is uncertain. Nor is this a study type driven by data requirements. In addition, the tested formulation is not related to the representative formulation for the AIR5 (MON 52276).
52	CA 8.3.1.2, CP 10.3.1.2	Almasri H. et al.	2020	Mixtures of an insecticide, a fungicide and a herbicide induce high toxicities and systemic physiological disturbances in winter Apis mellifera honey bees.	Ecotoxicology and environmental safety (2020), Vol. 203, Art. No. 111013	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Provides information on the effects of glyphosate on the survival of honey bees (at 3 different concentrations after 20 days continuous oral exposure) but no risk assessment relevant endpoints are given. The study does not alter risk assessment. Individual daily food consumption was not provided (it was calculated by dividing the food consumed per cage by the number of bees that remained alive each day in each cage. The

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						same as suggested by the OECD TG 245). No ECx assessment was conducted. The pesticide concentrations in the sugar solution were checked by GC-MS/MS but values were not reported in article. The test is not performed according to the OECD TG 245 chronic oral toxicity test (longer exposure) and therefore it is not possible to properly assess validity criteria (control mortality after 10 days). Whilst the study presents survival data, the test was conducted as an extended laboratory based study with a 20 day duration. This does not reflect an accepted test design used for Annex I renewal purposes. Despite 14 cages of 30 bees being for each exposure regimen, (cage design is not described), there are no standard error bars presented for the replication so the relevance of the proposed survival lines cannot be established from Figure 1, where survival in the glyphosate only groups, appears to be in the 80-90% up until day 12-15 and then at this point there appears also to be an effect in the control with survival dropping off sharply. A further point is that there is no positive control group for the DMSO used to enable dispersal of the substances. The influence of this on the overall toxicity is uncertain. Despite what appears to be a reliable test, there are some shortcomings in the test design.
53	CA 8.3.1.2, CP 10.3.1.2	Strobl V. et al.	2020	Positive Correlation between Pesticide Consumption and Longevity in Solitary Bees: Are We Overlooking Fitness Trade-Offs?	Insects (2020), Vol. 11, No. 11, Art. No. 819	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Provides information on the survival of solitary bees after chronic exposure to glyphosate (at 1 single concentrations after 10 days continuous oral exposure) but no risk assessment relevant endpoints are given. The study does not alter existing risk assessment. Although the <i>Osmia bicornis</i> tested adults were obtained from cocoons reared in the laboratory, original individuals were transferred from organic orchards in Germany and previous pesticide exposure cannot be totally excluded. Measured parameters are not clearly described and there seems to be an error/typo in the glyphosate dose at which the bees were exposed. Sucrose solution consumption was recorded but no analytical verifications of the test item concentrations in the medium were conducted. No guidance document is available yet for lab studies with solitary bees. No ECx assessment was conducted for any of the parameters studied.
54	CA 8.3.1.4, CP 10.3.1.4	Delkash-Roudsari S. et al.	2020	Assessment of lethal and sublethal effects of imidacloprid, ethion, and glyphosate on aversive conditioning, motility, and lifespan in honey bees (<i>Apis mellifera</i> L.).	Ecotoxicology and environmental safety (2020), Vol. 204, Art. No. 111108	The article has been classified as relevant by full text - Category B and not reliable for the following reason: No endpoints are provided, the study does not alter risk assessment but the findings of the work could serve to support the (low) chronic toxicity of glyphosate (sublethal effects) to honey bees as part of a broader discussion. The source of the test individuals is not clearly reported and the lack of a previous pesticide exposure cannot be excluded. The duration of the chronic study is not clear (bee lifespan) and there is no indication about the days the bees were exposed to the tested concentrations. Chronic dose metrics per bee cannot be precisely quantified. No analytical verifications of the test item concentrations in the chronic oral test were conducted. The test designs for the discrimination task and the rhythm, nicity monitoring are not recognisable for consideration at the EU level. In addition to glyphosate, RoundUp® Ready-to-Use Weed and Grass Killer were tested that cannot be related to the representative formulation for the glyphosate EU renewal (the representative formulation is

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						MON 52276).
55	CA 8.3.2, CP 10.3.2.2	Lacava M. et al.	2021	The pest-specific effects of glyphosate on functional response of a wolf spider.	Chemosphere (2021), Vol. 262, Art. No. 127785	The article has been classified as relevant by full text - Category B and not reliable for the following reason: No endpoints are provided, the study does not alter risk assessment but the findings of the work could serve to support the sub-lethal effects (on the feeding rate) of glyphosate on a ground-dwelling spider as part of a broader discussion. The test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. It is therefore not possible to confirm whether the product used contained POEA or not. The tested individuals were collected from native forests from Uruguay and previous pesticide exposure cannot be excluded. The tested substance has not been fully identified. A tested rate is not provided (just that a glyphosate solution with a concentration of 280 mg/L a.i. was used). Tested individuals were exposed by contact for only 30 minutes. The experiment run in glass containers only for 4 hours, so only acute effects were assessed. Only one concentration was tested. The outcome of the study not only depends on the effects of glyphosate, but also on the tested prey (different results depending on the prey). The test is not conducted according to any guidance and therefore, it is not possible to confirm whether the study meets any validity criteria.
56	CA 8.3.2.2, CP 10.3.2.2	Sekrecka M.	2019	Influence of pesticides and bioregulators on the number of predatory mite Typhlodromus pyri (Phytoseiidae). Original title: Wplyw srodkow ochrony roslin oraz bioregulatorow na liczebnośc drapieżnego roztoczka dobroczynka gruszcowa Typhlodromus pyri (Phytoseiidae).	Zeszyty Naukowe Instytutu Ogrodnictwa (2019), Vol. 27, pp. 41-52	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides information on the mortality of T. pyri mites 7 days after exposure but no risk assessment relevant endpoint can be obtained from the study. The study does not alter risk assessment. The test item is not fully described. The tested dose in g a.s./ha is not clear. Source of the tested individuals not fully reported (conditions of the lab mass rearing). The test design and the developmental phase of the tested individuals are not relatable to EU risk assessment (apple slices sprayed using a potter tower and then after drying, animals introduced). No agreed guidance has been followed (Bluemel et al., 2000).
57	CA 8.4.2, CP 10.4.2	Alhewairini S. S.	2020	Toxicity effects of glyphosate and metribuzin on five species of soil-dwelling predatory mites.	Pakistan Journal of Agricultural Sciences (2020), Vol. 57, No. 5, pp. 1429-1435	The article has been classified as relevant by full text - Category B and not reliable for the following reason: Provides information on the effects of glyphosate on the mortality of 5 soil-dwelling mite species, but other than that recommended in EU Reg. 283/2013 (Data requirements for AS). No relevant endpoints for the risk assessment are given. The study does not alter risk assessment. No real dose was provided: 1.1 L (glypho-48 or glyphosate as AS)/100L water, but it is unclear how many L of solution applied per ha? Individuals collected in the field with no information about those sites and previous exposures to pesticides. No clear information about maintenance of the mites previous to treatments in the laboratory. The experimental conditions (temperature and soil) are inadequately described and no validation data or analytical verifications are provided. No ECx assessment was conducted. The test is not performed according to any OECD guideline.
58	CA 8.6.2,	Fernandes	2020	Ecotoxicological Assessment	Applied Sciences (2020),	The article has been classified as relevant by full text - Category B and reliable

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
	CP 10.6.2	B. et al.		of a Glyphosate-Based Herbicide in Cover Plants: Medicago sativa L. as a Model Species.	Vol. 10, No. 15, Art. No. 5098	with restrictions for the following reason: The study does not alter risk assessment. All validity criteria according to OECD TG 208 cannot be evaluated. Test concentrations are not confirmed by analytical verifications. Only one tested species. In addition, the formulation tested is a potassium salt, whereas the AIR5 representative formulation MON 52276 contains an isopropylammonium salt.
59	CA 8.6.2, CP 10.6.2	Jang S. J. et al.	2020	Inhibition of wheat growth planted after glyphosate application to weeds.	Weed Science (2020), Vol. 68, No. 4, pp. 373-381	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: No endpoints are provided, the study does not alter risk assessment but the findings of the work could serve to support the lack of effects of glyphosate fresh and aged residues (0, 1, 3, 5, and 7 days) after sowing wheat seeds in soils previously treated with glyphosate at 600 g ae/ha as part of a broader discussion. The formulation tested contains an ammonium salt, which has a substantially higher loading than the AIR5 representative formulation MON 52276 that contain isopropylammonium salt. The tested formulation is not fully identified. No analytical verifications of the test concentration in soil were conducted. OECD TG 208 was not followed and therefore validity criteria cannot be assessed. No emergence was investigated, only growth. No ECx assessment was conducted. The number of tested individuals is insufficient.
60	CP 7.1.7	Gateva S. et al.	2020	Direct treatment with roundup vs. treatment with plant extract previously influenced by roundup: does the genotoxic effect differ?	Dokladi na Bolgarskata Akademiya na Naukite (2020), Vol. 73, No. 7, pp. 978-984	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Article provides only supplementary information on cytotoxicity and genotoxicity of GBH, but not altering risk assessment. No specification of glyphosate formulation (test item). No negative control (formulation without glyphosate). No historical control data. Genotoxic effects only observed at cytotoxic concentrations.
61	CP 7.1.7	Haponenko Y. Y. et al.	2019	Zinc oxide nanoparticles enhance the hepatotoxic effects of glyphosate herbicide.	Medichna ta Klinichna Khimiya (2019), No. 4, pp. 32-36	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Article provides information about effects of glyphosate based herbicide on liver parameters of rats, but does not alter risk assessment. The product used in the study is not sufficiently identified, the test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. It is therefore not possible to confirm whether the product used contained POEA or not. Furthermore, study procedure, test species and animal housing conditions are not adequately described.
62	CP 7.1.7	Tizhe E. V. et al.	2020	Effect of zinc supplementation on chronic hepatorenal toxicity following oral exposure to glyphosate-based herbicide (Bushfire®) in rats.	The Journal of international medical research (2020), Vol. 48, No. 8, pp. 1-15	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The publication investigates whether zinc supplementation can improve toxicity caused by glyphosate. No new information on glyphosate toxicity itself is provided and the article does not alter risk assessment. Many important basic parameters which are standard in the conduct and reporting of toxicology studies are absent; food consumption, body weight, body weight gain, clinical signs, diarrhea, etc. In addition, gavage of a surfactant containing mixture for 36 weeks would likely result in gastrointestinal effects, such as ulcers in the forestomach of rats, and necropsies were not performed to evaluate this significant consequence of repeated gavaging of surfactant. With the absence of recorded liver weights, potential adaptive responses of increased

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						circulating enzymes are not able to be put into context. Therefore, no context of the clinical chemistry findings can be understood.

Table 35: Relevant but supplementary (category B) articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
27	Abdel-Halim K. Y. et al.	CA 5.8.3	2020	Cytotoxicity and Oxidative Stress Responses of Imidacloprid and Glyphosate in Human Prostate Epithelial WPM-Y.1 Cell Line.	Journal of Toxicology (2020), Vol. 2020, Art. No. 4364650	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides only supplementary information on cytotoxicity of glyphosate on prostate cells that does not alter risk assessment. The ability of glyphosate to induce in vitro cytotoxic and oxidative stress on normal human cells (prostate epithelial WPM-Y.1 cell line) was evaluated with the methyl tetrazolium test (MTT) and histopathological investigation. Cell viability was evaluated with an MTT test for 24 h. The median inhibition concentration (IC50) value was 0.025 mM for glyphosate. At low concentrations (mM), the examined pesticides significantly reduced cell viability and caused cell death. Coupling of cell viability, oxidative stress, and histopathological alterations provides good tools to assess the cytotoxicity of pesticides in vitro at low concentrations. Moreover, the abnormal damage of cell structure is considered an important signal of organ dysfunction. Metabolic activation system was not clearly and completely described. No HCD and no positive or negative control were reported.
57	Alhewairini S. S.	CA 8.4.2, CP 10.4.2	2020	Toxicity effects of glyphosate and metribuzin on five species of soil-dwelling predatory mites.	Pakistan Journal of Agricultural Sciences (2020), Vol. 57, No. 5, pp. 1429-1435	The article has been classified as relevant by full text - Category B and not reliable for the following reason: Provides information on the effects of glyphosate on the mortality of 5 soil-dwelling mite species, but other than that recommended in EU Reg. 283/2013 (Data requirements for AS). No relevant endpoints for the risk assessment are given. The study does not alter risk assessment. No real dose was provided: 1.1 L (glypho-48 or glyphosate as AS)/100L water, but it is unclear how many L of solution applied per ha? Individuals collected in the field with no information about those sites and previous exposures to pesticides. No clear information about maintenance of the mites previous to treatments in the laboratory. The experimental conditions (temperature and soil) are inadequately described and no validation data or analytical verifications are provided. No ECx assessment was conducted. The test is not performed according to any OECD guideline.
52	Almasri H. et al.	CA 8.3.1.2, CP 10.3.1.2	2020	Mixtures of an insecticide, a fungicide and a herbicide induce high toxicities and systemic physiological disturbances in winter Apis mellifera honey bees.	Ecotoxicology and environmental safety (2020), Vol. 203, Art. No. 111013	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Provides information on the effects of glyphosate on the survival of honey bees (at 3 different concentrations after 20 days continuous oral exposure) but no risk assessment relevant endpoints are given. The study does not alter risk assessment. Individual daily food consumption was not provided (it was calculated by dividing the food consumed per cage by the number of bees that remained alive each day in each cage. The same as suggested by the OECD TG 245). No ECx assessment was conducted. The pesticide concentrations in the sugar solution were checked by GC-MS/MS but values were not reported in article. The test is not performed according to the OECD TG 245 chronic oral toxicity test (longer exposure) and therefore it is not possible to properly assess validity criteria (control mortality after 10 days). Whilst the study presents survival data, the test was conducted as an extended

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						laboratory based study with a 20 day duration. This does not reflect an accepted test design used for Annex I renewal purposes. Despite 14 cages of 30 bees being for each exposure regimen, (cage design is not described), there are no standard error bars presented for the replication so the relevance of the proposed survival lines cannot be established from Figure 1, where survival in the glyphosate only groups, appears to be in the 80-90% up until day 12-15 and then at this point there appears also to be an effect in the control with survival dropping off sharply. A further point is that there is no positive control group for the DMSO used to enable dispersal of the substances. The influence of this on the overall toxicity is uncertain. Despite what appears to be a reliable test, there are some shortcomings in the test design.
49	Asnicar D. et al.	CA 8.2.4.2, CP 10.2.1	2020	Effects of Glyphosate-Based and Derived Products on Sea Urchin Larval Development.	JOURNAL OF MARINE SCIENCE AND ENGINEERING (2020), Vol. 8, No. 9, Art. No. 661	The article has been classified as relevant by full text - Category B and not reliable for the following reason: Provides information on the effects of glyphosate, AMPA and Roundup on the larval development of sea urchins but no risk assessment relevant endpoints are given. The study does not alter risk assessment. The purity of glyphosate and AMPA are not provided. The urchins were collected from the open environment and could have been exposed previously to pesticides. The experimental conditions are inadequately described (it is unclear if oxygen saturation > 80% applies to all treatment or just for respiration rate treatment). Light conditions are not reported. No validation data or analytical verifications are provided. No Ecx assessment was conducted.
18	Babich R. et al.	CA 5.8.2	2020	Kidney developmental effects of metal-herbicide mixtures: Implications for chronic kidney disease of unknown etiology.	Environment international (2020), Vol. 144, Art. No. 106019	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides only supplementary information on kidney effects of glyphosate and does not alter risk assessment. The purpose of the publication was to investigate the possible causes of chronic kidney disease of unknown etiology (CKDu) which is an emerging global concern affecting several agricultural communities in the Americas and South Asia. The hypothesis was that exposure to contaminants such as heavy metals (e.g., Cd, As, Pb, and V) and organic pesticides (e.g., glyphosate) present in the drinking water could provoke the onset and progression of this disease in childhood. Using zebrafish <i>Danio rerio</i> , a toxicology and kidney disease model, the authors examined kidney developmental effects of exposure to (i) environmentally derived samples from CKDu endemic and non-endemic regions and (ii) Cd, As, V, Pb, and glyphosate as individual compounds and in mixtures. The authors found that drinking water is contaminated with various organic chemicals including nephrotoxic compounds as well as heavy metals, but at levels considered safe for drinking. Histological studies and gene expression analyses examining markers of kidney development (<i>pax2a</i>) and kidney injury (<i>kim1</i>) showed novel metal and glyphosate-metal mixture specific effects on kidney development. Glyphosate showed that interactive nephrotoxic effects of organic agrochemicals and heavy metals are an important consideration. For example, glyphosate at 10 ppb can induce <i>kim1</i> , implying that exposure to this chemical even at very low-levels can contribute to kidney injury. They postulate that

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						exposure to glyphosate coupled with individuals with impaired kidney development is likely to increase the initiation and progression of CKDu. However, gene expression data also suggest, when in a mixture with metals such as arsenic, glyphosate may have alternate effects on kidneys, including effects that may not be detrimental. Test system of the study is not clearly and completely described. Metabolic activation system is not clearly and completely described. Cytotoxicity tests are not reported. Only 1 dose level was used which does not allow a dose response analysis. Furthermore, no positive control and no HCD provided.
28	Ben Maamar M. et al.	CA 5.8.3	2020	Epigenome-wide association study for glyphosate induced transgenerational sperm DNA methylation and histone retention epigenetic biomarkers for disease.	Epigenetics (2020): Ahead of print. 10.1080/15592294.2020.1853319	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article provides only supplementary information on epigenetic effects of glyphosate and does not alter risk assessment. The current study was designed to identify epigenetic biomarkers for glyphosate-induced transgenerational diseases using an epigenome-wide association study (EWAS). Following transient glyphosate exposure of gestating female rats (F0 generation), during the developmental period of gonadal sex determination, the subsequent transgenerational F3 generation, with no direct exposure, were aged to 1 year and animals with specific pathologies identified. The pathologies investigated included prostate disease, kidney disease, obesity, and presence of multiple disease. The sperm were collected from the glyphosate lineage males with only an individual disease and used to identify specific differential DNA methylation regions (DMRs) and the differential histone retention sites (DHRs) associated with that pathology. Unique signatures of DMRs and DHRs for each pathology were identified for the specific diseases. However, a comparison of DMRs and DHRs of the glyphosate treated animals versus the control animals was not performed. It is not clear what has been actually tested. Test conditions are not clearly and completely described. Only one dose level was reported / no dose-response relationship. Number of animals used per dose level not reported. Method of analysis was not described for analysis test media (no validation, no verifications). Furthermore, no HCD reported, and no positive controls.
16	Coullery R. et al.	CA 5.7	2020	Exposure to glyphosate during pregnancy induces neurobehavioral alterations and downregulation of Wnt5a-CaMKII pathway.	Reproductive toxicology (2020), Vol. 96, pp. 390-398	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Article provides useful information on neonates rats administered glyphosate after gestational exposure, but not altering risk assessment. In addition, IP injection is not a preferred route of administration for human exposure. Only 2 dose levels were tested and no information on the purity of glyphosate was reported. No analytical determinations performed. No historical control data provided. Lack of positive control and information allowing to assess the robustness of the investigations and results.
12	Crump K. et al.	CA 5.5	2020	Correcting for Multiple Comparisons in Statistical Analysis of Animal Bioassay Data.	Toxicological Sciences (2020) Vol. 177, Issue 2, pp. 523-524	The article has been classified as relevant by full text - Category B for the following reason: In this letter to Editor Crump et al. (2021) commented on Rusyn et al. (<i>Questioning Existing Cancer Hazard Evaluation Standards in the Name of Statistics. Toxicol Sci. (2020), Vol. 177, Issue 2, pp. 521-522</i>) where Rusyn et al. comments on the original Crump et al. article (<i>Accounting for Multiple Comparisons in Statistical Analysis of the Extensive Bioassay Data on</i>

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						<i>Glyphosate. Toxicol Sci. (2020) Vol. 175, Issue 2, pp. 156-167</i>). The original Crump et al. article was evaluated in the previous search and classified as relevant by full text (Category A and reliable without restrictions). The summary of the article was presented in the dossier under MCA 5.5./026. The appropriateness of the approach presented in the original article has been further reiterated in a Letter to the Editor (<i>Crump K. et al., Toxicological Sciences (2020), Vol. 177, Issue 2, pp. 523-524, Correcting for Multiple Comparisons in Statistical Analysis of Animal Bioassay Data</i>). Crump et al. replied to Rusyn et al. (<i>Questioning existing cancer hazard evaluation standards in the name of statistics. Toxicol Sci. (2020), Vol. 177, Issue 2, pp. 521-522</i>) and explain that the statistical method used in their analysis of the extensive bioassay data on glyphosate provides adequate interpretation of the p-values. They state that before a p-value can be interpreted appropriately, it must be correct, i.e., it must reflect the correct false positive rate for the hypothesis under consideration. The statistical method used in their analysis of the extensive bioassay data on glyphosate provides p-values that correct false positive rates by properly accounting for the multitude of tumours that require analysis by standard statistical methods. As the Letter to the Editor provides only supplementary information to the original Crump et al. article and does not alter risk assessment, the letter was classified as relevant by full text but of Category B (relevant but supplementary).
48	Cuzziol Boccioni A. P. et al.	CA 8.1.4, CP 10.1.3	2020	Toxicity assessment at different experimental scenarios with glyphosate, chlorpyrifos and antibiotics in <i>Rhinella arenarum</i> (Anura: Bufonidae) tadpoles.	Chemosphere (2020), Art. No. 128475, Ahead of print. doi.org/10.1016/j.chemosphere.2020.128475	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not alter risk assessment but the findings of the work could serve to discuss the sublethal effects (biological, morphological and enzymatic parameters) of two different glyphosate concentrations (1.25 and 2.5 mg/L) to tadpoles of an amphibian species as part of a broader weight of evidence. An endpoint cannot be derived. No analytical verifications of the test item concentrations are provided. Surface egg strings of <i>R. arenarum</i> used for the experiments were collected from temporary small ponds situated in the natural floodplain of the Parana River, considered as an unpolluted site (no analytical verification was however made). Only two concentrations were tested.
39	de Souza Ferreira; A. P. et al.	CA 6.10.1	2020	Glyphosate and aminomethylphosphonic acid (AMPA) residues in Brazilian honey.	Food Additives & Contaminants, Part B: Surveillance (2020): Ahead of Print doi.org/10.1080/19393210.2020.1855676	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Glyphosate residues were found in Brazilian honey (HR = 0.22 mg/kg). An AMPA residue of 0.1 mg/kg was detected in one sample. The residue levels found in the analysed samples are not directly relevant to the EU uses supported in the AIR dossier. However, the data may be useful to interpret the results of the EU monitoring data for glyphosate residues in honey. Therefore, they are considered as category B (supplementary information). The publication is reliable in most points, however origin of samples is not described in full detail.
54	Delkash-Roudsari S.	CA 8.3.1.4, CP 10.3.1.4	2020	Assessment of lethal and sublethal effects of	Ecotoxicology and environmental safety (2020),	The article has been classified as relevant by full text - Category B and not reliable for the following reason: No endpoints are provided, the study does not

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
	et al.			imidacloprid, ethion, and glyphosate on aversive conditioning, motility, and lifespan in honey bees (<i>Apis mellifera</i> L.).	Vol. 204, Art. No. 111108	alter risk assessment but the findings of the work could serve to support the (low) chronic toxicity of glyphosate (sublethal effects) to honey bees as part of a broader discussion. The source of the test individuals is not clearly reported and the lack of a previous pesticide exposure cannot be excluded. The duration of the chronic study is not clear (bee lifespan) and there is no indication about the days the bees were exposed to the tested concentrations. Chronic dose metrics per bee cannot be precisely quantified. No analytical verifications of the test item concentrations in the chronic oral test were conducted. The test designs for the discrimination task and the rhythm, nicity monitoring are not recognisable for consideration at the EU level. In addition to glyphosate, RoundUp® Ready-to-Use Weed and Grass Killer were tested that cannot be related to the representative formulation for the glyphosate EU renewal (the representative formulation is MON 52276).
29	Diers S. et al.	CA 5.8.3	2020	Does glyphosate affect the in vitro maturation and further development of bovine oocytes? Original Title: Beeinflusst Glyphosat die In-vitro-Maturation und weitere Entwicklung boviner Oozyten?	Zuechtungskunde (2020), Vol. 92, No. 4, pp. 223-235	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on endocrine disruption, but not altering risk assessment. It is difficult to be interpreted because no HCD and no positive controls were used. The data requirement for endocrine disruption is not met, since neither mode of action nor ED properties are sufficiently shown due to no dose-response relationship for gene induction. In addition, the product used in the study is not sufficiently identified, the test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. It is therefore not possible to confirm whether the product used, is the representative glyphosate formulation MON 52276 relevant for the glyphosate EU renewal and whether the product contained POEA or not.
10	Faniband M. H. et al.	CA 5.1	2021	Human experimental exposure to glyphosate and biomonitoring of young Swedish adults.	International journal of hygiene and environmental health (2021), Vol. 231, Art. No. 113657	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Article provides only supplementary information on kinetics of glyphosate in human volunteers but not altering risk assessment. No information on the test item and its source or purity. Only one dose level was tested and biomonitoring was restricted to urinary excretion.
58	Fernandes B. et al.	CA 8.6.2, CP 10.6.2	2020	Ecotoxicological Assessment of a Glyphosate-Based Herbicide in Cover Plants: <i>Medicago sativa</i> L. as a Model Species.	Applied Sciences (2020), Vol. 10, No. 15, Art. No. 5098	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not alter risk assessment. All validity criteria according to OECD TG 208 cannot be evaluated. Test concentrations are not confirmed by analytical verifications. Only one tested species. In addition, the formulation tested is a potassium salt, whereas the AIR5 representative formulation MON 52276 contains an isopropylammonium salt.
37	Fu H. et al.	CA 5.8.3	2020	Effects of glyphosate-based herbicide-contaminated diets on reproductive organ toxicity and hypothalamic-pituitary-ovarian axis hormones in weaned piglets.	Environmental pollution (2020): Ahead of print. doi.org/10.1016/j.envpol.2020.115596	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The article is not reliable for the following reason: The study did not follow any OECD guideline and was not performed under GLP conditions. No analytical verifications of the test item in the diet were performed. In addition, there was no information on food consumption reported, therefore the actual intake of glyphosate by the animals remains unclear. The piglet tested in the study is an animal species that is not routinely used to investigate reproductive performances. The authors did not provide information

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						on the sexual maturation in the tested strain which would have helped in the interpretation of parameters like the hormone levels and histopathology of the uterus and in the ovaries. Overall, for piglets that have been used in the recent years for investigation on potential effects on reproductive toxicity induced by a xenobiotic, it has been reported that in sexually immature animals a reliable histopathological and functional evaluation of possible test item–related effects on the female reproductive organs is not possible (1-4). In this study hormonal analyses has been performed only once at sacrifice when for reliable interpretation of the data, hormonal analysis should have been taken more times on the same animal (ideally before the treatment) and the time of sampling should be recorded. Therefore, the reliability of the hormonal data in this study is also questionable. In conclusion, the study presents many deficiencies and does not meet the basic scientific principles for this type of investigation and is it considered not to be reliable.
30	Ganesan S. et al.	CA 5.8.3	2020	Ovarian mitochondrial and oxidative stress proteins are altered by glyphosate exposure in mice.	Toxicology and applied pharmacology (2020), Vol. 402, Art. No. 115116	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This publication does not alter risk assessment negatively, since no (major) effects were found with any of the tested read outs. However, it could be used - with restrictions - as supporting evidence for lack of any effects of test item on liver, heart, spleen, kidney or uterine weight, AKT or gamma-H2AX protein abundance, or the ovarian level of steroidogenic proteins, or on estrous cyclicity and circulating E2 or P4. The study was performed following scientifically acceptable standards. However, reliability is given with restrictions since details on test item (e.g. purity), historical control data, positive controls and analysis of test media are missing.
60	Gateva S. et al.	CP 7.1.7	2020	Direct treatment with roundup vs. treatment with plant extract previously influenced by roundup: does the genotoxic effect differ?	Dokladi na Bolgarskata Akademiya na Naukite (2020), Vol. 73, No. 7, pp. 978-984	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Article provides only supplementary information on cytotoxicity and genotoxicity of GBH, but not altering risk assessment. No specification of glyphosate formulation (test item). No negative control (formulation without glyphosate). No historical control data. Genotoxic effects only observed at cytotoxic concentrations.
19	Ghosh S. et al.	CA 5.8.2	2020	Cardiogenic shock with first-degree heart block in a patient with glyphosate-surfactant poisoning.	Tropical doctor (2020): Ahead of print. 10.1177/0049475520971594	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper is a case report that describes the case of a 34-year-old man who developed corrosive injury to his GI tract after ingesting 200 mL of formulated glyphosate. He went on to develop hypotension and transient multiorgan failure including myocardial dysfunction which improved with intensive supportive care. This sequence of events is not unexpected in large ingestions of formulated glyphosate.
43	Gomez-Ramos M. d. M. et al.	CA 6.3	2020	Pesticide residues evaluation of organic crops. A critical appraisal.	Food Chemistry: X 5 (2020), Art. No. 100079	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, not altering risk assessment. Analytical method development and optimisation for detection of multiple pesticides in crops with low LOQ. Monitoring data from 136 commercial organic samples showed no residues of glyphosate, n-acetyl glyphosate, AMPA, n-acetyl-AMPA. Origin of samples not fully described. For method validation it is relied on published data.

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20	Hao J. Y. et al.	CA 5.8.2	2020	Glyphosate-induced Delayed Pyloric Obstruction, Ulcer and Scar Changes.	Journal of the College of Physicians and Surgeons-Pakistan (2020), Vol. 30, No. 8, pp. 868-870	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper describes a case report of a 44-year-old woman who presented with pyloric obstruction two months after accidentally ingesting 100 mL of formulated glyphosate. After the initial ingestion, her family took her to the hospital where the patient was treated for 13 days and then discharged. She later returned to the hospital with recurrent nausea & vomiting, underwent endoscopy where they discovered scarring and pyloric obstruction. The patient underwent a partial gastrectomy and gastrojejunostomy with improvement of symptoms. This clinical course of events is not unexpected in significant ingestions of formulated glyphosate as these ingestions are corrosive and can cause scarring & gastric outlet obstruction.
61	Haponenko Y. Y. et al.	CP 7.1.7	2019	Zinc oxide nanoparticles enhance the hepatotoxic effects of glyphosate herbicide.	Medichna ta Klinichna Khimiya (2019), No. 4, pp. 32-36	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Article provides information about effects of glyphosate based herbicide on liver parameters of rats, but does not alter risk assessment. The product used in the study is not sufficiently identified, the test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. It is therefore not possible to confirm whether the product used contained POEA or not. Furthermore, study procedure, test species and animal housing conditions are not adequately described.
31	Ingaramo P. et al.	CA 5.8.3	2020	Are glyphosate and glyphosate-based herbicides endocrine disruptors that alter female fertility?	Molecular and cellular endocrinology (2020), Vol. 518, Art. No. 110934	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The review article selectively reports results of in vitro and in vivo studies suggesting endocrine disrupting properties of glyphosate and glyphosate-based herbicides at low or "environmentally relevant" dose levels in the female reproductive tissue. Most of the studies focused on the endocrine-disrupting effects of glyphosate in endocrine-dependent tissues (ovary and uterus). The authors claim that most of these studies show effects at very low concentrations, which would be undetected in traditional toxicology studies. However, they did not adequately explain the design of the experiments, address potential confounders in the cited studies (e.g., overt and systemic toxicity, cytotoxicity) that impact the studies validity to inform an endocrine assessment, nor the reasons why the reported investigations can detect effects that the comprehensive database of regulatory toxicity studies for glyphosate were not able to ascertain. The most significant flaw with this review was the omission of numerous reliable and relevant published in vitro and in vivo studies, and publicly available regulatory assessments, that are critical to inform a weight of evidence assessment for glyphosate and GBHs. The missing information was largely included in the recent 2017 EFSA Glyphosate ED weight of evidence evaluation where it was concluded that glyphosate is not an endocrine disruptor. Figure 1 proposes mechanisms of endocrine disruption that include impact on aromatase activity, estrogenic effects through a ligand-independent mechanism,

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						cell proliferation, and expression of oestrogen-dependent proteins. It was concluded in the recent 2015 USEPA and 2017 EFSA weight of evidence ED assessments that glyphosate does not impact steroidogenesis including aromatase activity. Findings in the articles cited in figure 1 for aromatase activity are confounded by non-specific effects of supraphysiological concentrations of the surfactant in these formulations in in vitro or in vivo systems. There is no evidence of glyphosate impacting aromatase expression or activity by assessing apical endpoints in the comprehensive toxicology database for glyphosate (for review see Levine et al. 2020). Figure 1 also purports that glyphosate is a ligand for the oestrogen receptor. It has been well established that glyphosate is not a ligand for the oestrogen receptor and does not transactivate the oestrogen responsive genes endpoints (for a comprehensive review of the oestrogen pathway see Levine et al. 2020). The paper cited in figure 1 to support a ligand-independent mechanism by Mesnage et al. 2017 was reported to only occur at the unrealistic exposure concentration of 20,000 mg glyphosate a.e./L (118 µm) and by activating protein kinase A that increases the phosphorylation and activation of the oestrogen receptor. Mesnage et al. did not provide evidence in their paper that the phosphorylation status of the oestrogen receptor was changed to support their hypothesis nor is this hypothesis consistent with the weight of evidence from validate functional assays. Figure 1 also proposes that glyphosate can cause cell proliferation through and endocrine mechanism. This hypothesis is inconsistent with results of the comprehensive database of glyphosate toxicology studies. The key citation that support this hypothesis is by Thongprakaisang et al. 2013. Mesnage et al. 2017 concluded the results in Thongprakaisang et al. 2013 likely result from contamination and not glyphosate. An earlier study that reported modest proliferation by glyphosate only occurred at the extremely high concentration of 1000 µM and the authors concluded that the modest proliferation observed in their study resulted from a non-endocrine mechanism (Lin and Garry, 2000). The final endocrine mechanism described in figure 1 refers to expression of oestrogen-dependent proteins. The significance of these findings is questionable based on the results of the endocrine screening battery reviewed by EFSA in 2017 and the comprehensive regulatory toxicology database for glyphosate. The authors, however, recognize that it was not possible to reproduce in vivo most of the effects of glyphosate and/or GBHs observed in vitro. They claim this could be due that the species tested are not the appropriate ones and claimed that the sheep constitute a highly appropriate model to evaluate the effects of EDCs due to the similarity between sheep and humans, especially regarding gestational and thyroid physiologies and brain ontogeny. However, robust data supporting this assumption are limited.
59	Jang S. J. et al.	CA 8.6.2, CP 10.6.2	2020	Inhibition of wheat growth planted after glyphosate application to weeds.	Weed Science (2020), Vol. 68, No. 4, pp. 373-381	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: No endpoints are provided, the study does not alter risk assessment but the findings of the work could serve to support the lack of effects of glyphosate fresh and aged residues (0, 1, 3, 5, and 7 days)

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						after sowing wheat seeds in soils previously treated with glyphosate at 600 g ae/ha as part of a broader discussion. The formulation tested contains an ammonium salt, which has a substantially higher loading than the AIR5 representative formulation MON 52276 that contain isopropylammonium salt. The tested formulation is not fully identified. No analytical verifications of the test concentration in soil were conducted. OECD TG 208 was not followed and therefore validity criteria cannot be assessed. No emergence was investigated, only growth. No ECx assessment was conducted. The number of tested individuals is insufficient.
44	Khan N. et al.	CA 6.3	2020	Assessment of Health Risk due to Pesticide Residues in Fruits, Vegetables, Soil, and Water.	Journal of Chemistry (2020), Vol. 2020, Art. No. 5497952	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, does not alter risk assessment. Fruit, vegetable, soil and water samples from Pakistan were analysed for glyphosate residues (monitoring), with detects in fruits and vegetables. Missing validation data, analytical method and origin of samples not sufficiently described.
21	Kimura T. et al.	CA 5.8.2	2020	Renal tubular injury by glyphosate-based herbicide.	Clinical and experimental nephrology (2020), Vol. 24, No. 12, pp. 1186	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This is a case report with an image showing proximal tubular epithelial injury in a 78-year-old woman who ingested formulated glyphosate in a suicide attempt. This ingestion resulted in transient renal failure which improved with hemodialysis. This is not unexpected in large suicidal ingestions.
55	Lacava M. et al.	CA 8.3.2, CP 10.3.2.2	2021	The pest-specific effects of glyphosate on functional response of a wolf spider.	Chemosphere (2021), Vol. 262, Art. No. 127785	The article has been classified as relevant by full text - Category B and not reliable for the following reason: No endpoints are provided, the study does not alter risk assessment but the findings of the work could serve to support the sub-lethal effects (on the feeding rate) of glyphosate on a ground-dwelling spider as part of a broader discussion. The test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. It is therefore not possible to confirm whether the product used contained POEA or not. The tested individuals were collected from native forests from Uruguay and previous pesticide exposure cannot be excluded. The tested substance has not been fully identified. A tested rate is not provided (just that a glyphosate solution with a concentration of 280 mg/L a.i. was used). Tested individuals were exposed by contact for only 30 minutes. The experiment run in glass containers only for 4 hours, so only acute effects were assessed. Only one concentration was tested. The outcome of the study not only depends on the effects of glyphosate, but also on the tested prey (different results depending on the prey). The test is not conducted according to any guidance and therefore, it is not possible to confirm whether the study meets any validity criteria.
32	Levine S. L. et al.	CA 5.8.3	2020	Review and analysis of the potential for glyphosate to interact with the estrogen, androgen and thyroid pathways. Special Issue: Glyphosate exposure and	Pest Management Science (2020), Vol. 76, No. 9, pp. 2886-2906	The article has been classified as relevant by full text - Category B for the following reason: The article is a review article providing a good summary and also further analysis on possible endocrine disrupting properties of glyphosate in USEPAs endocrine disruptor screening program (EDSP) and further literature but does not alter risk assessment.

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				toxicology.		
13	Lorenz V. et al.	CA 5.6, CA 5.8.3	2020	Perinatal exposure to glyphosate or a glyphosate-based formulation disrupts hormonal and uterine milieu during the receptive state in rats.	Food and chemical toxicology (2020), Vol. 143, Art. No. 111560	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. The article is not reliable for the following reason: The study does not follow any OECD testing guideline, therefore the experimental design and procedures should be not only explained but validated against appropriate reference substances and the interpretation of the results should be supported by adequate historical control data that allow the correct interpretation of the relevance of a change. This is particularly true when assessing the biological relevance of hormonal changes and/or the assessed gene expression. In this publication such data are not provided. It is not clear why only 9 F1 females/group were selected to assess the effects on the pre-implantation phase and not a higher number to cover the basal hormonal variations observed, which should be high based on the scattered values observed in the control group of this study. The authors claim that there was an imbalance in the serum levels of estradiol 2 in relation to progesterone, but the progesterone values were apparently not impacted. Similarly, they claim that glyphosate induced significantly the ERα expression at protein level subepithelial stroma of the uteri (which was not observed in other parts of the uterus), although no changes were observed in ERα mRNA expression but do not take into consideration the inconsistency of their results. Similarly, they concluded that glyphosate provoked aberrant expression on implantation-genes although a consistent response was not observed among all the tested genes. The reproductive performance data of F1 females is not reported in a transparent way: only selected photos of the uterus are presented to indicate that there was a decrease in the number of implantation sites. However, the actual number of the implantation sites per animals are not reported. Similarly the number of corpora lutea, resorption sites and preimplantation loss are represented in graphics (figure 2A, B and C), but the actual number have not been given. So, the authors do not provide the reader of an objective information to understand whether an effect did occur. Overall, this publication presents several deficiencies and bias in reporting the results of their investigations and as such is considered to be not reliable.
45	Lozowicka B. et al.	CA 6.3	2019	Pesticide residues in seeds of winter oilseed rape (Brassica napus L.).	Progress in Plant Protection (2019), Vol. 59, No. 4, pp. 199-205	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, not altering risk assessment. Monitoring data from OSR samples collected in Poland during 2016-2019. Glyphosate residues found in 14% of samples (max 0.27 mg/kg). Analytical method not fully described, origin of samples not fully described.
17	Masood M. I. et al.	CA 5.7	2020	Environment permissible concentrations of glyphosate in drinking water can influence the fate of neural stem cells from the subventricular zone of the	Environmental pollution (2020), Vol. 270, Art. No. 116179	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides only supplementary information on neurotoxicity (in vitro experiment), but does not alter risk assessment. The reporting on the test material is limited. Ca²⁺ uptake was investigated at too high concentrations not relevant for assessment (> 1mM), but the remaining endpoints were investigated at suitable concentrations (< 1

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				postnatal mouse.		mM). No positive or negative controls were included and historical control data were not provided.
14	Milesi M. M. et al.	CA 5.6.1	2020	Correction to: Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats (Correction to Archives of Toxicology (2019) 93:3635–3638).	Archives of Toxicology (2020), Vol. 94, No. 8, pp. 2897–2898	The article has been classified as relevant by full text - Category B for the following reason: This is a serie of comments and corrections connected to the article by Milesi et al. (<i>Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2018), Vol. 92, No. 8, pp. 2629-2643</i>). This article was evaluated in the previous search and classified as relevant by full text - Category B. In order to reflect the category of the main article, the correction was also classified as Category B. The correction corrects Table 1 of the publication, which lists factors associated with the pre-implantation loss rate and factors associated with fetoplacental parameters of F2 offspring in control and glyphosate-based herbicide-treated female rats. The serie contains e.g. following articles, comments and corrections: Milesi et al., Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2018);92(8):2629-2643. Plewis, Comment on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2019);93(1):207. Milesi et al., Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2019);93(12):3635-3638. Paumgarten, Comment on Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats, Arch Toxicol 92:2629-2643 : On the impairment of female reproductive performance by developmental exposure to a glyphosate-based herbicide. Arch Toxicol. (2019);93(3):831-832. Plewis, Comment on response from Milesi et al. to Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2020);94(1):351-352. Milesi et al., Correction to: Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2020);94(8):2897-2898.
51	Motta E. V. S. et al.	CA 8.3.1.1.2, CA 8.3.1.4, CP 10.3.1.1.2, CP 10.3.1.4, CP 10.3.1.6	2020	Oral or Topical Exposure to Glyphosate in Herbicide Formulation Impacts the Gut Microbiota and Survival Rates of Honey Bees.	Applied and environmental microbiology (2020), Vol. 86, No. 18	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: No proper endpoints are provided (only acute toxicity at 24h). The study does not alter risk assessment, but the findings of the work could serve to support the acute contact toxicity to bees and further sublethal effects of glyphosate (mortality) on honey bees as part of a broader discussion. Both laboratory and field experiments were conducted. The study is

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						focused on the effects of glyphosate on bee gut microbiota. The glyphosate standard tested item is not fully described. No analytical verifications of the test item concentrations in the medium were conducted. Study is not compliant with any accepted guideline and therefore validity criteria cannot be assessed. Glyphosate was tested topically at different concentrations and only EC50 assessment (at 24 h instead of at 48 h as recommended by the guidance) was performed. A dose-response effect was observed in several parameters studied (not only mortality). For the field experiments, there is no security that the bees haven't been exposed to pesticides before the tests started. Findings cannot be related directly to impacts at the population level therefore influence on direct level and indirect assessment is uncertain. Nor is this a study type driven by data requirements. In addition, the tested formulation is not related to the representative formulation for the AIR5 (MON 52276).
33	Munoz J. P. et al.	CA 5.8.3	2020	Glyphosate and the key characteristics of an endocrine disruptor: A review.	Chemosphere (2020): Ahead of print. doi.org/10.1016/j.chemosphere.2020.128619	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. Munoz et al. based on the ten key characteristics (KC) of Endocrine Disrupting Chemicals (EDCs) recently proposed (La Merrill et al., 2020) reviewed a selective set of publications related to glyphosate as a possible endocrine disruptor. The authors claim that glyphosate exhibited eight of the ten KCs of an EDC. This checklist of KC was not created in conjunction with nor is it recognised by any regulatory agency as a replacement for established weight of evidence approaches used by regulatory agencies to assess whether a compound is an endocrine disruptor. The authors did not perform a systematic review for glyphosate of the publicly available information resulting in a significant flaw with this publication, the omission of numerous reliable and relevant published in vitro and in vivo studies, and publicly available regulatory assessments, that are critical to inform a weight of evidence assessment for glyphosate. Glyphosate has undergone extensive regulatory testing and assessment to evaluate its potential to be an endocrine disruptor. In 2015 the US EPA released its weight of evidence evaluation of glyphosate and more recently the European Food Safety Authority in 2017, who independently performed an endocrine assessment as part of the glyphosate renewal process. Both agencies concluded based on the US EPA EDSP battery and all other scientifically relevant information that glyphosate does not interact with the oestrogen, androgen thyroid and steroidogenic pathways and concluded that glyphosate is not an endocrine disruptor. Furthermore, the cited studies in Munoz et al. 2020 were not critically evaluated for relevance and reliability nor evaluated with a weight of evidence to conclude whether the criteria for each key characteristic was met. The authors state "Here, we conduct a comprehensive review where we describe the most important findings of the glyphosate effects in the endocrine system and assess the mechanistic evidence to classify it as an EDC". However, many of the studies the authors cite as evidence for glyphosate meeting one of the KC they used studies that were conducted with a glyphosate-based formulation only. The

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						authors generally focused on a small subset of papers that used non-standard in vitro methods that tested glyphosate-based formulations at unrealistically high levels and in vivo studies that don't follow international guidelines. These papers inflate the relevance of findings derived from their in vitro models to the in vivo situation and invariably fail to discuss or recognize confounding effects of the formulation. As a result, these papers are not considered to be reliable for an endocrine assessment.
22	Nayak S. et al.	CA 5.8.2	2020	Deliberate self-poisoning in south odisha: study of its clinical profile and outcome.	Asian Journal of Pharmaceutical and Clinical Research (2020), Vol. 13, No. 8, pp. 169-173	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper aimed to characterize the nature of self-poisoning in the Odisha region of India. Over a 2-year period they evaluated 200 patients who presented to the Maharaja Krishna Medical College and found that 149 (74.5%) patients had ingested pesticides. 10 patients ingested glyphosate. 9 developed nausea & vomiting, 2 developed corrosive injury to their GI tracts, 2 had pneumonitis likely due to aspiration, 2 developed hypotension, 2 had altered mental status, 2 developed dysrhythmias, 3 had dysphagia, 3 had dehydration & 2 died. There was certainly overlap in the clinical picture as there are more symptoms described than patients. The symptoms described are not unexpected as large ingestions of formulated glyphosate causes corrosive injury to the GI tract and subsequent hypotension & multiorgan failure.
40	Panseri S. et al.	CA 6.10.1	2020	Pesticides and Environmental Contaminants in Organic Honeys According to Their Different Productive Areas toward Food Safety Protection.	Foods (2020), Vol. 9, No. 12	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, not altering risk assessment. Monitoring data from organic honey samples (n = 98) collected in Italy (Apulia) during 2019-2020. Residues of glyphosate, AMPA and glufosinate were not found in any sample. References are provided to validation of analytical methods. Source of honey samples are not exactly described.
41	Petcu C. D. et al.	CA 6.10.1	2020	Study regarding the honey contamination degree assessed in a specialized production unit.	Scientific Papers, Series D. Animal Science (2020), Vol. 63, No. 1, pp. 442-449	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Supplementary information only, not altering risk assessment. Samples from "honey sourced from beekeepers from the centre and Southern Romania (in order to form a large and homogeneous batch)" were analysed. Analysis done by LC-MS/MS with poor method description and no validation data. Residues of glyphosate were below the limit of quantification (<0.01 mg/kg) in 15 acacia and 15 polyfloral honey samples.
15	Refaie A. A. et al.	CA 5.6.2	2020	DNA and liver damage induced by glyphosate herbicide in suckling pups of wistar rat.	Current Topics in Toxicology (2020), Vol. 16, pp. 205-214	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The article is not reliable for the following reason: Storage conditions of test item not reported. Animal strain not further specified and age of dams not reported. No analysis of test item in solvent performed. Insufficient number of animals/group tested. It should be noted that the experimental unit for such an experimental design is the litter, not the individual pups. Therefore, statistical evaluations should have been conducted to compare across litters, where n = 2, affording only one degree of freedom for statistical comparisons.
23	Ren Y. et al.	CA 5.8.2	2020	Case report of pyloric obstruction caused by	Acta Medica Mediterranea (2020), Vol. 36, No. 6, pp.	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
				glyphosate herbicides.	3485-3488	paper is a case series describing 3 patients with formulated glyphosate ingestions. The authors describe pyloric obstruction and laryngeal scarring in the patients. Formulated glyphosate is caustic to the GI tract and airways so this clinical scenario is not unexpected.
56	Sekrecka M.	CA 8.3.2.2, CP 10.3.2.2	2019	Influence of pesticides and bioregulators on the number of predatory mite <i>Typhlodromus pyri</i> (Phytoseiidae). Original title: Wplyw srodkow ochrony roslin oraz bioregulatorow na liczebosc drapieznego roztocza dobroczynka gruszowca <i>Typhlodromus pyri</i> (Phytoseiidae).	Zeszyty Naukowe Instytutu Ogrodnictwa (2019), Vol. 27, pp. 41-52	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides information on the mortality of <i>T. pyri</i> mites 7 days after exposure but no risk assessment relevant endpoint can be obtained from the study. The study does not alter risk assessment. The test item is not fully described. The tested dose in g a.s./ha is not clear. Source of the tested individuals not fully reported (conditions of the lab mass rearing). The test design and the developmental phase of the tested individuals are not relatable to EU risk assessment (apple slices sprayed using a potter tower and then after drying, animals introduced). No agreed guidance has been followed (Blumel et al., 2000).
24	Shin J. et al.	CA 5.8.2	2020	Severe chemical burns related to dermal exposure to herbicide containing glyphosate and glufosinate with surfactant in Korea.	Annals of occupational and environmental medicine (2020), Vol. 32, Art. No. E28	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This article is a case report detailing an injury sustained by a farmer who was reportedly spraying a glyphosate/glufosinate herbicide formulation, spilled the contents of his back pack on his right shoulder & hip, did not wash the formulation off and presented 3 days after with rapidly progressive necrotizing wounds that have a necrotizing fasciitis appearance in the photos. Unfortunately, the patient succumbed to his injuries. These herbicides are not corrosive to the skin in this fashion, it is impossible to tell what the farmer was exposed to in this scenario as infectious processes can result in a very similar clinical appearance. This is completely atypical and should not be associated with glyphosate exposure.
11	Skanes B. et al.	CA 5.4, CA 5.5, CA 5.6	2021	Hazard assessment using an in-silico toxicity assessment of the transformation products of boscalid, pyraclostrobin, fenbuconazole and glyphosate generated by exposure to an advanced oxidative process.	Toxicology in vitro : an international journal published in association with BIBRA (2021), Vol. 70, Art. No. 105049	The article has been classified as relevant by full text - Category B and not reliable for the following reason: Article provides only supplementary information on in silico evaluation of genotoxicity, acute oral toxicity or carcinogenicity but not altering risk assessment. Only one type of software was used for each endpoint. Toxtree was used to address Cramer classification, Ames test, carcinogenicity / mutagenicity, DNA binding and micronucleus assay. Toxicity estimation software tool (TEST) was used to address developmental toxicity and the rat oral LD50. The toxicity evaluation based on single software was considered not robust enough.
47	Solomon K. R.	CA 6.9	2020	Estimated exposure to glyphosate in humans via environmental, occupational, and dietary pathways: an updated review of the scientific literature. Special Issue: Glyphosate exposure and toxicology.	Pest Management Science (2020), Vol. 76, No. 9, pp. 2878-2885	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: The article provides only supplemental information, which does not alter risk assessment. No endpoint was derived. Extended risk assessment using published exposure data for air, water, bystanders, the general public, domesticated animals, pets, and applicators. Based on this large dataset, no risk to any exposure pathway/group was identified. The article is reliable with respect to risk assessment methodologies applied, i.e. well described methodologies and data set for analysis.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
38	Spinaci M. et al.	CA 5.8.3, CP 7.1.7	2020	Glyphosate and its formulation Roundup impair pig oocyte maturation.	Scientific reports (2020), Vol. 10, No. 1, Art. No. 12007	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides only supplementary information on maturation, steroidogenesis and oxidative stress markers of cumulus-oocyte complexes (COCs) from pigs, but not altering risk assessment. In addition, effects were mainly found at unphysiologically high doses (> 1 mM). The purity and storage conditions of the test item were not reported. No cytotoxicity testing performed, no positive and truly negative controls performed and also no historical control data provided. No metabolic activation system applied.
25	Stajniko A. et al.	CA 5.8.2	2020	Seasonal glyphosate and AMPA levels in urine of children and adolescents living in rural regions of Northeastern Slovenia.	Environment international (2020), Vol. 143, Art. No. 105985	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper aimed to measure glyphosate and AMPA exposure in children & adolescents in Slovenian agricultural areas. They measured 1st morning urines in the 246 participants in the winter and again in 225 participants in the summer. They addressed the fact that the detection of AMPA could come from other detergent exposures and not from glyphosate alone. 221 blood samples were also drawn in the first sampling period. They detected glyphosate in 27% of the urine samples from the winter and 22% in the summer. Their data demonstrate much lower glyphosate concentrations than reported in other parts of the world. A large percentage of the children had concentrations less than the LOQ with 72% of the younger children & 74% of the older children testing below the LOQ in the first sampling period, and 79% of the younger & 76 % of the older testing below the LOQ in the 2nd period. The estimated systemic dose of glyphosate was 0.003 mcg/kg of body weight – significantly below the ADI of 0.1 mg/kg of body weight. This article supports the evidence that glyphosate exposures tend to be very low and don't pose a health risk.
53	Strobl V. et al.	CA 8.3.1.2, CP 10.3.1.2	2020	Positive Correlation between Pesticide Consumption and Longevity in Solitary Bees: Are We Overlooking Fitness Trade-Offs?	Insects (2020), Vol. 11, No. 11, Art. No. 819	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Provides information on the survival of solitary bees after chronic exposure to glyphosate (at 1 single concentrations after 10 days continuous oral exposure) but no risk assessment relevant endpoints are given. The study does not alter existing risk assessment. Although the <i>Osmia bicornis</i> tested adults were obtained from cocoons reared in the laboratory, original individuals were transferred from organic orchards in Germany and previous pesticide exposure cannot be totally excluded. Measured parameters are not clearly described and there seems to be an error/typo in the glyphosate dose at which the bees were exposed. Sucrose solution consumption was recorded but no analytical verifications of the test item concentrations in the medium were conducted. No guidance document is available yet for lab studies with solitary bees. No ECx assessment was conducted for any of the parameters studied.
50	Tajnaiova L. et al.	CA 8.2.6.1, CA 8.2.7, CP 10.2.1	2020	Determination of the Ecotoxicity of Herbicides Roundup (R) Classic Pro and Garlon New in Aquatic and Terrestrial Environments.	Plants-Basel (2020), Vol. 9, No. 9, Article No. 1203	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This study investigates the effect of Roundup® Classic Pro (not relevant for the AIR5, as it contains the additive surfactant ether alkylamine ethoxylate) and AMPA on the aquatic organisms duckweed <i>Lemna minor</i> and green algae <i>Desmodesmus subspicatus</i> and on the

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						enzymatic activity of soil. The endpoints for AMPA do not alter risk assessment but are supportive of low exposure risk (relevant growth inhibition endpoints obtained for both green algae and macrophytes: <i>Desmodesmus subspicatus</i> (green alga): 72 h AMPA IC₅₀ = 117.8 mg/L; 72 h AMPA IC₅₀ with pH adjusted solution = 192.1 mg/L). No analytical verifications of the test item concentrations in the medium were conducted. The experimental design was carried out according to the following standards: EN ISO 8692 (Water Quality-Fresh Water Algal Growth Inhibition Test with Unicellular Green Algae (ISO 8692:2012)) and EN ISO 20079 (Water Quality-Determination of the Toxic Effect of Water Constituents and Waste Water on Duckweed (<i>Lemna minor</i>)-Duckweed Growth Inhibition Test (ISO 20079:2005)). Only the IC₅₀ assessment was performed. There is no analytical to confirm exposure. Results are also ambiguous in that % inhibition plots are presented but data presented is unknown (rate or biomass or cell density?).
6	Tauchnitz N. et al.	CA 7.1.3, CA 7.1.1.2	2020	Assessment of pesticide inputs into surface waters by agricultural and urban sources - A case study in the Querne/Weida catchment, central Germany.	Environmental pollution (2020), Vol. 267, Art. No. 115186	The article describes pesticide analyses, amongst them glyphosate, in surface waters and in soil samples within a German catchment area (CA 7.5). Additionally, batch adsorption (CA 7.1.3) and anaerobic soil degradation experiments (CA 7.1.1.2) were conducted. For CA 7.5, the article has been classified as relevant by full text - Category A and reliable without restrictions: A detailed summary for CA 7.5 is provided. Please refer to Tables 32 and 33 above. For CA 7.1.1.2 and CA 7.1.2, see below. The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability for CA 7.1.1.2 and CA 7.1.3 for the following reason: CA 7.1.1.2: For the anaerobic degradation experiment, the methods are well described, however the experimental design is not in agreement with the relevant guideline (OECD 307), e.g. due to use of synthetic rainwater, insufficient information on the test concentrations, use of slurry of a liquid-solid ratio of 0.3:1, air-tight incubation and analysis of pore water, only. From the information provided, it cannot be concluded on the representativeness of the soils used. Further, besides the final half-live, no detailed results are reported. Thus, no conclusion can be made on the quality of the results. The results from the anaerobic degradation experiment are therefore considered not reliable. CA 7.1.3: For the batch adsorption experiment, the methods are well described, however the experimental design is not in agreement with the relevant guideline (OECD 106), e.g. due to use of synthetic rainwater instead of CaCl₂ solution, insufficient information on the test concentrations and a temperature of 10 °C. From the information provided, it cannot be concluded on the representativeness of the soils used. Further, besides the final adsorption parameters, no detailed results are reported. Thus, no conclusion can be made on the quality of the results. The adsorption results are therefore considered not reliable.
46	Tittlemier	CA 6.5.3	2020	Fate of glyphosate in wheat	Cereal Chemistry (2020):	The article has been classified relevant by full text - Category B and reliable with

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
	S. A. et al.			during milling and bread production.	Ahead of Print DOI: 10.1002/cche.10369	restrictions for the following reason: Supplementary information only. No endpoint is derived. The study does not alter risk assessment. This study is considered supportive for processing of wheat, however no clear processing factors can be derived. Absence of validation data in different processed wheat matrices. For the analytical method it is referred to another publication (Tittlemier et al., 2017).
62	Tizhe E. V. et al.	CP 7.1.7	2020	Effect of zinc supplementation on chronic hepatorenal toxicity following oral exposure to glyphosate-based herbicide (Bushfire®) in rats.	The Journal of international medical research (2020), Vol. 48, No. 8, pp. 1-15	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The publication investigates whether zinc supplementation can improve toxicity caused by glyphosate. No new information on glyphosate toxicity itself is provided and the article does not alter risk assessment. Many important basic parameters which are standard in the conduct and reporting of toxicology studies are absent; food consumption, body weight, body weight gain, clinical signs, diarrhea, etc. In addition, gavage of a surfactant containing mixture for 36 weeks would likely result in gastrointestinal effects, such as ulcers in the forestomach of rats, and necropsies were not performed to evaluate this significant consequence of repeated gavaging of surfactant. With the absence of recorded liver weights, potential adaptive responses of increased circulating enzymes are not able to be put into context. Therefore, no context of the clinical chemistry findings can be understood.
34	Toth G. et al.	CA 5.8.3	2020	Cytotoxicity and hormonal activity of glyphosate-based herbicides.	Environmental pollution (2020), Vol. 265, No. Pt B, Art. No. 115027	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This article provides only supplementary information for risk assessment, since the in vitro experiments were performed with yeast instead of human cells. Nevertheless, the findings showed, that neither glyphosate nor AMPA impaired estrogenic or androgenic activity in the test system. Purity and storage conditions of test items and historical control data not reported. Positive controls applied, but data not shown. This study claims that POEA and some glyphosate-based formulations are estrogenic and/or androgenic. However, the study does not provide reliable information that POEA or any of the tested formulations are estrogenic and/or androgenic. The results claiming estrogenicity and/or androgenicity of the formulations are not in agreement with what would be predicted based on chemical structures of the surfactants and are apparently confounded by cytotoxicity based on responses presented within the paper. Because of the surface-active properties (i.e. surfactant properties) of POEA and other surfactants, it is very difficult to generate interpretable results from in vitro or cell-based assays, like the yeast assay, with surfactants. Rather, conclusions of estrogenicity and androgenicity should be based on in vivo studies. Even if the activity levels claiming estrogenic or androgenic activity are taken at face value, their potency for the estrogen and androgen receptors is so low these responses are not considered biologically relevant and realistic exposures to these substances are far below reported effect levels in the paper.
26	Xiao L. et al.	CA 5.8.2	2021	A 9-year retrospective study of poisoning-related deaths in Southwest China (Sichuan).	Forensic Science International (2021): Ahead of Print	The article has been classified as relevant by full text - Category B for the following reason: Medical data not altering the existing risk assessment. This paper describes retrospective study evaluating 782 poisoning deaths in Sichuan

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
					10.1016/j.forsciint.2020.110558	Province, China. The deaths were characterized as accidental, suicidal or homicidal. Pesticide ingestion was responsible for 40% of deaths. Only 2 deaths were related to glyphosate formulations and no details were given about the cases.
42	Yaqub G. et al.	CA 6.10.1	2020	Monitoring and risk assessment due to presence of metals and pesticides residues in honey samples from the major honey producing forest belts and different brands.	Food Science and Technology (2020), Vol. 40, No. Suppl. 1, pp. 331-335	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: 25 samples of different national (Pakistan) and international honey brands were collected for analysis of residues of heavy metals and pesticides. Glyphosate residues were detected in 5 samples in a range of 0.44 - 3.5 mg/kg (ppm). The residue levels found in the analysed samples are not directly relevant to the EU uses supported in the AIR dossier. However, the data may be useful to interpret the results of the EU monitoring data for glyphosate residues in honey. Therefore, they are considered as category B (supplementary information). The publication is reliable, but with several restrictions, i.e. missing validation data, analytical method and origin of samples are not sufficiently described.
35	Zhang C. et al.	CA 5.8.3	2020	Molecular Basis for Endocrine Disruption by Pesticides Targeting Aromatase and Estrogen Receptor.	International journal of environmental research and public health (2020), Vol. 17, No. 16, Art. No. 5664	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article provides only supplementary information on in vitro data and binding information gained by in silico models but not altering risk assessment. Limited information on test material (batch, analytical purity) provided. Historical control data were not included. The reported inhibition of aromatase activity (up to 30% at 100 µM glyphosate acid) is likely related to using ethanol or DMSO as a solvent for glyphosate, rather than water or buffer. Glyphosate is not soluble in an organic solvent, like ethanol or DMSO, and this likely confounded the results of the assay because glyphosate was not fully solubilized. Zhang et al. used recombinant CYP19 at low protein levels in the assay and did not add a “buffering protein” like BSA, which made the aromatase enzyme, and its associated reductase, susceptible to denaturation. Consistent with denaturing the aromatase enzyme, the slope of the inhibition curve was extremely shallow, uncharacteristic of aromatase inhibition, and likely reflects confounding effects of undissolved test substance. In the USEPA’s test guideline for aromatase activity, activity of < 25% is considered negative and activity between 25% and < 50% is considered equivocal. Greater than 50% inhibition must be estimated for a substance to be considered positive in EPA’s guideline study.
36	Zhang J. et al.	CA 5.8.3	2021	Melatonin alleviates the deterioration of oocytes and hormonal disorders from mice subjected to glyphosate.	Molecular and cellular endocrinology (2021), Vol. 520, Art. No. 111073	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The publication investigates whether melatonin can improve reproductive defects caused by glyphosate. No new information on glyphosate toxicity is provided and the article does not alter risk assessment. There is a limited information on test material provided (no information on source, batch or purity), limited information on test animals (no information on housing, environmental conditions or weight), no historical control data provided.

Table 36: Articles of unclear relevance (category C) after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
63	CA 5.9.4	Intayoung U. et al.	2020	Effect of Occupational Exposure to Herbicides on Oxidative Stress in Sprayers.	Safety and Health at Work (2020): Ahead of print. doi.org/10.1016/j.shaw.2020.09.011	The relevance of this article is unclear (Category C) for the following reason: The underlying rationale for this study was that an increase in the urinary MDA level after a pesticide application would be indicative of a toxic effect of pesticides with potential future health consequences. In order to assess MDA levels related to an application, the authors used the collection and analysis of spot urine samples before and after a workday that involved application of either glyphosate alone (n = 52 or 56.0%), glyphosate and paraquat (n = 7 or 7.5%), or glyphosate and 2,4-D (n = 34, 36.5%). In essence, the authors were using a self-controlled pre/post study design with individuals acting as their own controls. The average difference between pre-application and post-application MDA values within the same individuals would serve as the basis for judging the impact of the on-study pesticide applications. The self-controlled results for workers in the 3 pesticide categories did not show a significant change in pre versus post workday MDA urinary levels. Therefore, one should conclude from those results that the pesticide applications did not increase MDA levels. Instead, the authors deviated from the self-controlled results and compared post work MDA levels for those who applied glyphosate and paraquat versus those who applied glyphosate alone. There is no pre-application baseline for this comparison and pre-application levels for these two groups differed appreciably (see Table 1). The post-workday comparison is not an evaluation of the on-study work and its effect on MDA levels. It should not be interpreted to conclude that the post-work difference in MDA levels across exposure categories indicates a joint effect of glyphosate and paraquat from the on-study applications. The comparison of relevance to the study's rationale is the self-controlled pre-work versus post-work comparison within pesticide classes. Other results showed that the (putatively protective) antioxidant enzyme GSH was not reduced for workers in any of the 3 pesticide categories. To conclude, this study did not show that glyphosate increases reactive oxygen species for pesticide workers or decreases potentially protective GSH levels. The relevance of these results for assessing glyphosate risk is uncertain.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
64	CA 8.3.1.2, CP 10.3.1.2	Motta E. V. S. et al.	2020	Impact of glyphosate on the honey bee gut microbiota: effects of intensity, duration, and timing of exposure.	mSystems (2020), Vol. 5, No. 4, pp. E00268-20	The relevance of this article is unclear (Category C) for the following reason: No endpoints are provided. Although this publication provides information about chronic impacts of glyphosate on bacteria that may be relevant at some level, it is uncertain without further guidance, how these data can be related to the EU level regulatory risk assessment (as the methods used are unrecognised) and how to interpret the data within the context of a renewal. Due to these uncertainties it has to be considered Category C with the uncertainties being the restrictions. The glyphosate formulation is not fully described. No analytical verifications of the test item concentrations in the medium were conducted. Study is not compliant with any accepted guideline and therefore validity criteria cannot be assessed. Although glyphosate was tested at different concentrations and a dose-response effect was observed in several parameters studied, no ECx assessment was performed.

Table 37: Articles of unclear relevance (category C) after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
63	Intayoung U. et al.	CA 5.9.4	2020	Effect of Occupational Exposure to Herbicides on Oxidative Stress in Sprayers.	Safety and Health at Work (2020): Ahead of print. doi.org/10.1016/j.shaw.2020.09.011	The relevance of this article is unclear (Category C) for the following reason: The underlying rationale for this study was that an increase in the urinary MDA level after a pesticide application would be indicative of a toxic effect of pesticides with potential future health consequences. In order to assess MDA levels related to an application, the authors used the collection and analysis of spot urine samples before and after a workday that involved application of either glyphosate alone (n = 52 or 56.0%), glyphosate and paraquat (n = 7 or 7.5%), or glyphosate and 2,4-D (n = 34, 36.5%). In essence, the authors were using a self-controlled pre/post study design with individuals acting as their own controls. The average difference between pre-application and post-application MDA values within the same individuals would serve as the basis for judging the impact of the on-study pesticide applications. The self-controlled results for workers in the 3 pesticide categories did not show a significant change in pre versus post workday MDA urinary levels. Therefore, one should conclude from those results that the pesticide applications did not increase MDA levels. Instead, the authors deviated from the self-controlled results and compared post work MDA levels for those who applied glyphosate and paraquat versus those who applied glyphosate alone. There is no pre-application baseline for this comparison and pre-application levels for these two groups differed appreciably (see Table 1). The post-workday comparison is not an evaluation of the on-study work and its effect on MDA levels. It should not be interpreted to conclude that the post-work difference in MDA levels across exposure categories indicates a joint effect of glyphosate and paraquat from the on-study applications. The comparison of relevance to the study's rationale is the self-controlled pre-work versus post-work comparison within pesticide classes. Other results showed that the (putatively protective) antioxidant enzyme GSH was not reduced for workers in any of the 3 pesticide categories. To conclude, this study did not show that glyphosate increases reactive oxygen species for pesticide workers or decreases potentially protective GSH levels. The relevance of these results for assessing glyphosate risk is uncertain.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
64	CA 8.3.1.2, CP 10.3.1.2	Motta E. V. S. et al.	2020	Impact of glyphosate on the honey bee gut microbiota: effects of intensity, duration, and timing of exposure.	mSystems (2020), Vol. 5, No. 4, pp. E00268-20	The relevance of this article is unclear (Category C) for the following reason: No endpoints are provided. Although this publication provides information about chronic impacts of glyphosate on bacteria that may be relevant at some level, it is uncertain without further guidance, how these data can be related to the EU level regulatory risk assessment (as the methods used are unrecognised) and how to interpret the data within the context of a renewal. Due to these uncertainties it has to be considered Category C with the uncertainties being the restrictions. The glyphosate formulation is not fully described. No analytical verifications of the test item concentrations in the medium were conducted. Study is not compliant with any accepted guideline and therefore validity criteria cannot be assessed. Although glyphosate was tested at different concentrations and a dose-response effect was observed in several parameters studied, no ECx assessment was performed.

Table 38: Articles excluded after detailed assessment (i.e. not relevant): sorted by technical section (and by author)

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
65	Ecotoxicology	Chaves A. et al.	2020	Effects of glyphosate-based herbicide on royal jelly production of <i>Apis mellifera</i> (Hymenoptera: Apidae) in field conditions.	JOURNAL OF APICULTURAL RESEARCH (2020): Ahead of print doi.org/10.1080/00218839.2020.1844463	The article has been classified as not relevant by full text for the following reason: This poorly described field study with honey bees was conducted in Brazil and therefore, does not deal with EU representative uses/conditions. In addition, the test item was not clearly identified, the test item purity is not stated, and the focus (royal jelly production) and design (hives without queens, for example) of the study are not relevant for the European regulatory purposes. The test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. For studies conducted in Brazil, Roundup Original is occasionally used which contains POEA and is therefore not relevant to the EU as POEA is banned in the EU.
66	Ecotoxicology	de Carvalho Cruz R. et al.	2020	Glyphosate-based herbicide toxicophenomics in marine diatoms: impacts on primary production and physiological fitness.	Applied Sciences (2020), Vol. 10, No. 21, Art. No. 7391	The article has been classified as not relevant by full text for the following reason: The test design used does not reflect recognised approaches for EU level regulatory risk assessment. Furthermore, test substance concentrations in the medium were not analytically determined. All validity criteria according to OECD TG 201 cannot be evaluated. Growth rate was determined at 48h (instead of 72h). The growth medium and the exposure phase are not clearly described. In addition, a glyphosate based formulation was tested which is not the representative formulation for the glyphosate EU renewal (the representative formulation is MON 52276).
67	Ecotoxicology	Jaiswal K. K. et al.	2020	Impact of glyphosate herbicide stress on metabolic growth and lipid inducement in <i>Chlorella sorokiniana</i> UUIND6 for biodiesel production.	Algal Research-Biomass Biofuels and Bioproducts (2020), Vol. 51, Art. No. 102071	The article has been classified as not relevant by full text for the following reason: The formulations used in this study contain POEA surfactant which is not permitted in formulated herbicidal products in the EU. The tested individuals were collected from a wastewater source and previous pesticide exposure cannot be excluded. No analytical verifications of the test item concentrations in the test media were conducted. The test is not conducted according to the OECD TG 201 and therefore, it is not possible to confirm whether the study meets the validity criteria. No statistical analysis was provided/conducted. In the preliminary test, behaviour of the control after 96h is not properly reported. IC50 was calculated at 96h (instead of 72h as proposed by the OECD TG 201).
68	Ecotoxicology	Khadra M. et al.	2018	Age matters: Submersion period shapes community composition of lake biofilms under glyphosate stress.	FACETS (2018), Vol. 3, pp. 934-951	The article has been classified as not relevant by full text for the following reason: This study, investigating the effects of a pulse exposure of glyphosate on the community composition and chlorophyll-a concentrations of lake biofilms at different colonization stages (2 months, 1 year, and 20 years), presents test design and system that are not relevant for the European regulatory purposes. The generated outcomes of the study

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
						(glyphosate and phosphorous concentrations, chlorophyll-a concentrations and community composition between different treatments) are not relatable to the EU level risk assessment. In addition, the publication is not dealing with EU representative conditions, although the exposure to glyphosate is under laboratory conditions, the biological community and the water were obtained from a lake in Canada. Due to the limitations of the study design reflecting a surface water exposure system specific to Canada, it is difficult to relate the findings to an EU situation from a risk assessment perspective.
69	Ecotoxicology	Pochron S. T. et al.	2021	Earthworms <i>Eisenia fetida</i> recover from Roundup exposure.	Applied Soil Ecology (2021), Vol. 158, Art. No. 103793	The article has been classified as not relevant by full text for the following reason: Roundup Ready to use III is a mixture of IPA salt at 2% and pelargonic acid at 2%. Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity). In addition, in this study the source of the tested earthworm is insufficiently described so previous exposure to pesticides cannot be excluded. Soil moisture was not reported and only one concentration was tested.
70	Ecotoxicology	Pompermaier A. et al.	2020	Waterborne agrichemicals compromise the anti-predatory behavior of zebrafish.	Environmental science and pollution research international (2020), Vol. 27, No. 31, pp. 38559-38567	The article has been classified as not relevant by full text for the following reason: Study design and test system in the study are not relevant for the European regulatory purposes. Exposure not confirmed, test item identity not confirmed. Fish were only exposed for 30 minutes and the outcome of anti-predator behaviour after exposure is not relevant for the European regulatory purpose / no endpoints presented that could be applied to an EU level risk assessment for renewal purposes.
71	Ecotoxicology	Roques J. A. C. et al.	2020	Stress response in terrestrial isopods: A comparative study on glycaemia.	Applied Soil Ecology (2020), Vol. 156, pp. Art. No. 103708	The article has been classified as not relevant by full text for the following reason: The usefulness of this study is low as it cannot be related to a data requirement. A consequence of low active content (170 g/L) is that the amount of co-formulant applied to the carrots would have been increased, which was not assessed. The exposure is also unrealistic with leaves and carrots soaked in solution for 15 minutes and remaining solution pipetted into the arenas, weekly for 25 days, worst case. The glucose results cannot be related. Characterization of soil (texture like sandy loam and pH) and source was not clearly described, just as moistened compost. Test conditions like temperature and humidity/soil moisture insufficiently described. There is no purity information presented in the paper and the exposure was not confirmed. The endpoints do not inform on risk assessment and is unclear how they can be used in a risk assessment. Therefore the study is not relevant.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
72	Ecotoxicology	Ruuskanen S. et al.	2020	Glyphosate-based herbicides influence antioxidants, reproductive hormones and gut microbiome but not reproduction: A long-term experiment in an avian model.	Environmental pollution (2020), Vol. 266, No. Pt 1, Art. No. 115108	The article has been classified as not relevant by full text for the following reason: The results cannot be related to the risk assessment and do not inform on population level effects and therefore not relevant. Also, the formulation tested is not relevant (Roundup Flex® - 480 g/L glyphosate, present as 588 g/L [43.8% w.w] of potassium salt of glyphosate with surfactants alkylpolyglycoside and nitrotryl).
73	Ecotoxicology	Zhao H. et al.	2020	Transcriptomic and metabolomic landscape of the molecular effects of glyphosate commercial formulation on <i>Apis mellifera ligustica</i> and <i>Apis cerana cerana</i> .	The Science of the total environment (2020), Vol. 744, Art. No. 110558	The article has been classified as not relevant by full text for the following reason: This study, dealing with the mode of action of glyphosate on bees at the molecular level (the numbers of differentially expressed genes and metabolites under glyphosate stress), presents findings based on cellular/molecular level that cannot be related to the risk assessment. The generated outcomes are not relatable to the EU level risk assessment. These effects do not necessarily proof correspondance to adverse ecotoxicological effects.
74	Ecotoxicology	Zheng T. et al.	2021	Effects of chronic glyphosate exposure on antioxidative status, metabolism and immune response in tilapia (GIFT, <i>Oreochromis niloticus</i>).	Comparative biochemistry and physiology, Part C (2021), Vol. 239, Art. No. 108878	The article has been classified as not relevant by full text for the following reason: This study, evaluating the chronic toxicity of glyphosate on fish (tilapia) via determining antioxidative status, metabolism, inflammation and immune response, presents findings based on cellular/molecular level that cannot be related to the risk assessment. The generated outcomes are not relatable to the EU level risk assessment. These effects do not necessarily proof correspondance to adverse ecotoxicological effects. In addition, the test item has not been identified at all.
75	Fate and behaviour in the environment	Chen L. et al.	2020	Effective glyphosate degradation through the combination of ozone/hydrogen peroxide oxidation and coagulation.	Desalination and Water Treatment (2020), Vol. 204, pp. 377-387	The article has been classified as not relevant by full text for the following reason: The article focuses on the effect of ozone and hydrogen peroxide treatment on glyphosate removal in industrial wastewater treatment of pesticide-producing industry. For the experiments, artificial colored "glyphosate-simulated wastewater" was used. No information on glyphosate analysis or concentration is reported. The article is therefore considered not relevant to the data requirement.
76	Fate and behaviour in the environment	Imfeld G. et al.	2020	Do rainfall characteristics affect the export of copper, zinc and synthetic pesticides in surface runoff from headwater catchments?	Science of the total environment (2020), Vol. 741, Art. No. 140437	The article has been classified as not relevant by full text for the following reason: Glyphosate was not the substance of concern, glyphosate was not included in the 12 pesticides analysed.
77	Fate and behaviour in the environment	Korgmaa V. et al.	2020	Removal of hazardous substances in municipal wastewater treatment plants.	Water Science & Technology (2020), Vol. 81, No. 9, pp. 1-12	The article has been classified as not relevant by full text for the following reason: The article focuses on the removal efficiency of municipal wastewater treatment plants for different pollutants, amongst them glyphosate & AMPA, and the influence of the level of complexity as well as operators' competency. No results of analysis of glyphosate or AMPA are reported. Therefore, the article is considered not relevant to the data requirements.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
78	Fate and behaviour in the environment	Kulikova N. A. et al.	2020	Monoammonium Phosphate Effects on Glyphosate in Soils: Mobilization, Phytotoxicity, and Alteration of the Microbial Community.	Eurasian Soil Science (2020), Vol. 53, No. 6, pp. 787-797	The article has been classified as not relevant by full text for the following reason: The article focuses on the amount of water-extractable glyphosate and AMPA from soils treated with glyphosate with or without addition of monoammonium phosphate. Further, the number of copies of 16S rRNA genes of bacteria was analysed to on the abundance of functional genes of bacteria responsible for glyphosate degradation. As neither degradation nor adsorption is investigated, the article is considered not relevant to the data requirements.
79	Residues in or on treated products, food and feed	Poppenga R. H. et al.	2020	Commercial and Industrial Chemical Hazards for Ruminants: An Update.	Veterinary Clinics of North America - Food Animal Practice (2020), Vol. 36, No. 3, pp. 621-639	The article has been classified as not relevant by full text for the following reason: Article only provides general information on the use of glyphosate and potential exposure of livestock to glyphosate residues. No monitoring data or any experimental data provided.
80	Residues in or on treated products, food and feed	Rebouillat P. et al.	2020	Estimated dietary pesticide exposure from plant-based foods using NMF-derived profiles in a large sample of French adults.	European Journal of Nutrition (2020): Ahead of Print. doi.org/10.1007/s00394-020-02344-8	The article has been classified as not relevant by full text for the following reason: Publication is dealing with general pesticide exposures (not glyphosate specific). Purpose of the study was to identify dietary pesticide exposure profiles from conventional and organic food. No information on direct exposure to glyphosate and no reporting of effects.
81	Toxicology and metabolism	Barukcic I.	2020	Glyphosate and non-hodgkin lymphoma: no causal relationship.	Journal of Drug Delivery and Therapeutics (2020), Vol. 10(1Suppl.), pp. 6-29	The article has been classified as not relevant by full text for the following reason: Review article - the method did not follow accepted epidemiologic practice and the methodology was very uncertain.
82	Toxicology and metabolism	Bootsikeaw S. et al.	2020	Urinary glyphosate biomonitoring of sprayers in vegetable farm in Thailand.	HUMAN AND ECOLOGICAL RISK ASSESSMENT (2020): Ahead of print doi.org/10.1080/10807039.2020.1797471	The article has been classified as not relevant by full text for the following reason: This is an exposure study conducted in Thailand. The study aimed to measure glyphosate exposure concentrations through inhalation, dermal contact, and urinary glyphosate concentrations among 43 vegetable farmers. However, use of test item is unclear - no comment on how workers in this study were exposed, neither by what test item, nor the amount, time, frequency etc. The article is lacking important information, cannot be used in risk assessment, and is therefore not relevant.
83	Toxicology and metabolism	Bozzini E.	2020	Contrasting norms on the use of evidence in risk assessment: the controversy surrounding the carcinogenicity of glyphosate.	Health, Risk & Society (2020), Vol. 22, No. 3/4, pp. 197-213	The article has been classified as not relevant by full text for the following reason: The article discusses differences in the outcome of risk assessment by IARC and EFSA using glyphosate as example. On the basis of the glyphosate case study, the article discusses advantages and shortcomings of different procedural norms for the selection and evaluation of scientific evidence, and their implications for the overall quality of risk assessments. The article is not relevant as this is an opinion article where no new data is provided that can be used for risk assessment. The article proves no new data.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
84	Toxicology and metabolism	Connolly A. et al.	2020	Human Biomonitoring of Glyphosate Exposures: State-of-the-Art and Future Research Challenges.	Toxics (2020), Vol. 8, No. 3, Art. No. 60	The article has been classified as not relevant by full text for the following reason: Review on studies that use human biomonitoring to measure urinary glyphosate and AMPA in occupationally and non-occupationally exposed population. Overall objective of the publication is to evaluate and standardise the results of the current state-of-the-art in glyphosate exposure assessment using human biomonitoring (urine samples), to evaluate the internal glyphosate concentrations to health-based guidance values, to outline the gaps in knowledge that are still required for interpretation of human biomonitoring data (human glyphosate metabolism and excretion), and to propose recommendations for sampling strategies, all of which could inform future studies investigating population exposures to glyphosate. This article is not relevant as it only provides secondary information (scientific and regulatory reviews), no correlation to glyphosate / glyphosate product and effects).
85	Toxicology and metabolism	Duke S. O.	2020	Glyphosate exposure and toxicology.	Pest Management Science (2020), Vol. 76, No. 9, pp. 2873	The article has been classified as not relevant by full text for the following reason: Editorial opinion article providing no new data. Not relevant for the risk assessment.
86	Toxicology and metabolism	Miroshnikova D. I. et al.	2019	The severity of endogenous intoxication and oxidative stress in the blood of workers in contact with glycine derivatives.	Gigiena i Sanitariya (2019), No. 8, pp. 851-856	The article has been classified as not relevant by full text for the following reason: Cross-sectional study so the temporal exposure-outcome sequence cannot be established. There was a convenience control group and apparent lack of control for potentially confounding factors. Unclear when the exposures took place relative to the study's blood collection. Duration of exposure not mentioned. A cross-sectional study, but the study design is not specified.
87	Toxicology and metabolism	Nerozzi C. et al.	2020	Effects of Roundup and its main component, glyphosate, upon mammalian sperm function and survival.	Scientific reports (2020), Vol. 10, No. 1, Art. No. 11026	The article has been classified as not relevant by full text for the following reason: Glyphosate concentration tested was not physiological (5-360 µg/mL).
88	Toxicology and metabolism	Nova P. et al.	2020	Glyphosate in Portuguese Adults - A Pilot Study.	Environmental toxicology and pharmacology (2020), Vol. 80, Art. No. 103462	The article has been classified as not relevant by full text for the following reason: Publication is dealing with general pesticide exposures (not glyphosate specific). Urine samples were collected from Portuguese adults of the general population (non occupational exposure) and investigated for the presence of GLY and AMPA. Systematically available internal dose levels were calculated retrospectively.
89	Toxicology and metabolism	Pierce J. S. et al.	2020	Pilot study evaluating inhalation and dermal glyphosate exposure resulting from simulated heavy residential consumer application of Roundup®).	Inhalation toxicology (2020), Vol. 32, No. 8, pp. 354-367	The article has been classified as not relevant by full text for the following reason: In this study, exposure of consumer applicants to Roundup Weed & Grass Killer Super Concentrate containing 50.2% glyphosate was monitored. However, the formulation is not the AIR5 relevant formulation containing 360 g/L and the article therefore not relevant for risk assessment.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
90	Toxicology and metabolism	Plewis I.	2020	Pesticides and transgenerational inheritance of pathologies: Designing, analysing and reporting rodent studies.	PLoS ONE (2020) Vol. 15, No. 10, Art. No. e0228762	The article has been classified as not relevant by full text for the following reason: The article is a meta analysis of five different publications from Washington state university, analysing generational effects of pesticides (Atrazine, Vinclozolin, Methoxychlor, Permethrin and Glyphosate) on rodents. The focus of this publication is the missing statistical analysis of litter effects within the mentioned studies.
91	Toxicology and metabolism	Rydz C. E. et al.	2020	Estimating Exposure to Three Commonly Used, Potentially Carcinogenic Pesticides (Chlorolathonil, 2,4-D, and Glyphosate) Among Agricultural Workers in Canada.	Annals of work exposures and health (2020): Ahead of print. doi: 10.1093/annweh/wxaa109	The article has been classified as not relevant by full text for the following reason: Publication is dealing with general pesticide exposures (not glyphosate specific). The study estimated exposure to 3 commonly used pesticides, among them glyphosate, in Canada's agricultural industry. No details on exposure, no reporting on effects related to pesticide exposure.
92	Toxicology and metabolism	Schaeffer J. W. et al.	2020	A pilot study to assess inhalation exposures among sugarcane workers in guatemala: Implications for chronic kidney disease of unknown origin.	International Journal of Environmental Research and Public Health (2020), Vol. 17, No. 16, Art. No. 5708	The article has been classified as not relevant by full text for the following reason: The publication was investigating the amount of glyphosate present in the environment. Monitoring without correlation to exact exposure or related effects. No information provided affecting the risk assessment.
93	Toxicology and metabolism	Ujowundu C. O. et al.	2020	Biochemical and liver histological changes in rats exposed to sub-lethal dose of Uproot-pesticide and the protective potentials of nutritional supplements.	Journal of Applied Biology & Biotechnology (2020), Vol. 8, No. 4, pp. 26-32	The article has been classified as not relevant by full text for the following reason: Intraperitoneal injection is not a preferred route of administration for an in vivo study. In addition, the publication is dealing with a glyphosate formulation Uproot containing POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal.
94	Toxicology and metabolism / Medical data	Wijerathna T. M. et al.	2020	Cellular injury leading to oxidative stress in acute poisoning with potassium permanganate/oxalic acid, paraquat, and glyphosate surfactant herbicide.	Environmental toxicology and pharmacology (2020), Vol. 80, Art. No. 103510	The article has been classified as not relevant by full text for the following reason: This paper describes using the biomarker of CytoC in Acute Kidney Injury in patients who ingested pesticides, including 27 cases of formulated glyphosate ingestion. Surfactants are known to cause caustic injury, hemodynamic instability and shock. It is not surprising, therefore, to see patients develop AKI in this setting. Mitochondrial injury is not unusual in hypovolemic shock, the authors are exploring the use of CytoC as an early biomarker for predicting who will develop acute renal dysfunction. Since this is in the setting of overdose rather than occupational exposure, the paper is not relevant for the regulatory risk assessment.

Appendix 1: AGG ADVICE on how to present the literature search in the dossier

ASSESSMENT GROUP ON GLYPHOSATE (AGG)

October 2019

**ADVICE TO GTF2:
HOW TO PRESENT THE LITERATURE SEARCH
IN THE DOSSIER TO BE SUBMITTED JUNE 2020**

The literature search should be carried out and presented as recommended in the EFSA Guidance EFSA Journal 2011;9(2):2092) including its recently published Appendix, available at the EFSA Journal.

**Rapid assessment of
titles/abstracts:**

Articles that are
considered as **not
relevant**:

Not necessary to submit
articles or study
summaries but
justification needed at a
general level, i.e. criteria
used to classify references
as being clearly non-
relevant.

**Detailed assessment of
full text of articles:**
Articles that are
considered as **not
relevant**
or
considered **not reliable**:

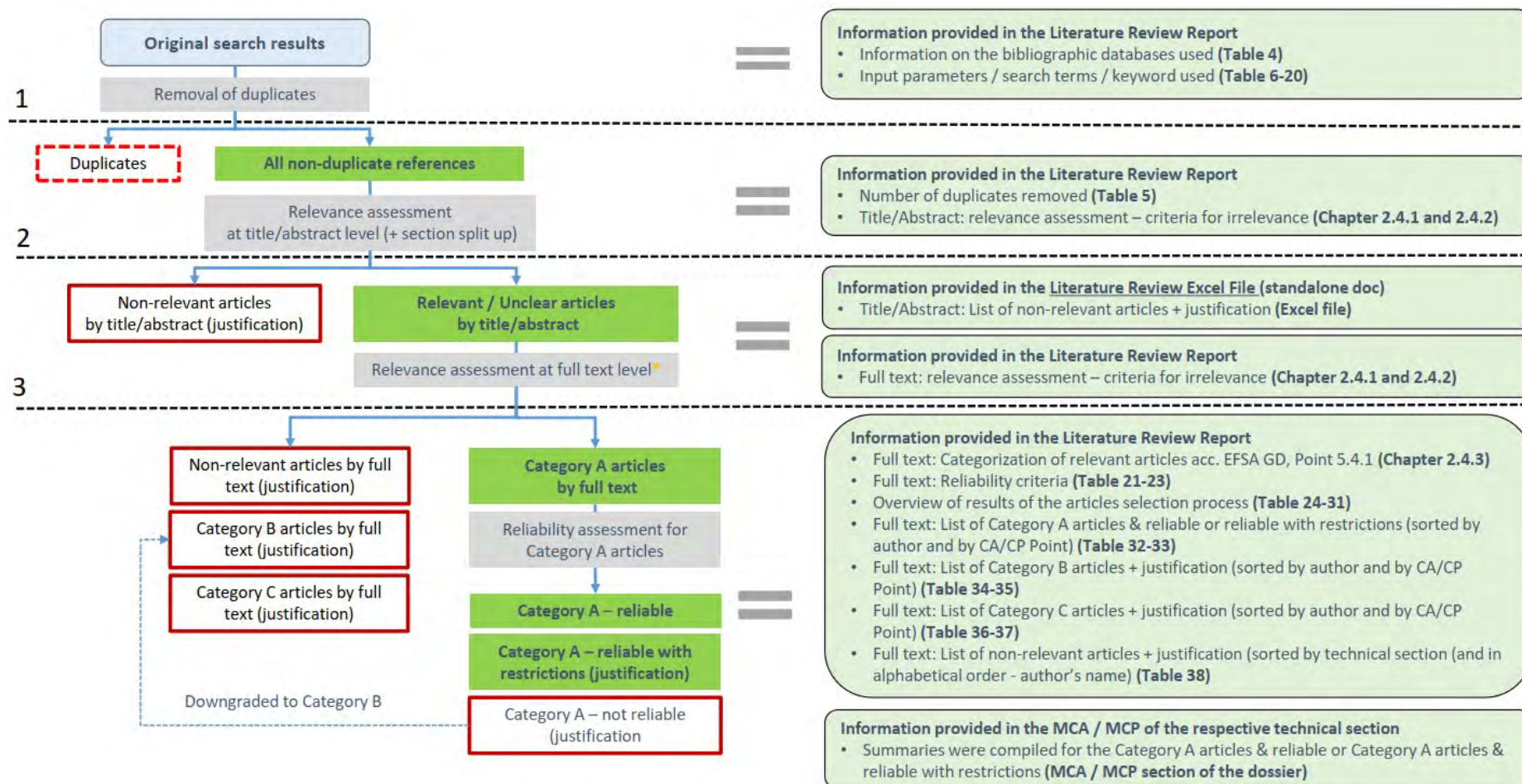
Necessary to submit
articles and statement
with the reason of
rejection (no study
summaries).

**Detailed assessment of
full text of articles:**
Articles considered as
relevant and reliable:

Necessary to submit
articles. A detailed study
summary should be
provided in the relevant
section of Doc
MCA/MCP.

For presentation of
detailed study summary,
reference is made to
EFSA Administrative
guidance on submission
of dossiers and
assessment reports for
the peer-review of
pesticide active
substances (27 March
2019, doi:
10.2903/sp.efsa.2016.EN
-1612).

Appendix 2: The process of articles selection



^{*} All articles (and their translations) evaluated at full-text level (detailed assessment) are submitted to the AGG.

Appendix 3: ORIGINAL SEARCH QUERY - July 2020 – December 2020

Preparing the search queries on STN:

FILE 'STNGUIDE' ENTERED AT 13:42:41 ON 04 JAN 2021
CHARGED TO COST=113898

L1 QUE SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
SAVE TEMP L1 GLY1/Q

L2 QUE SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
SAVE TEMP L2 GLY2/Q

L3 QUE SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL

L4 QUE SPE=ON ABB=ON PLU=ON HYDROXYMETHYLPHOSPHONATE OR
HYDROXYMETHYLPHOSPHONIC ACID

L5 QUE SPE=ON ABB=ON PLU=ON L3 OR L4
SAVE TEMP L5 GLY3/Q

L6 QUE SPE=ON ABB=ON PLU=ON 35404-71-8 OR METHYLAMINO METHYL
PHOSPHONIC ACID OR METHYLAMINOMETHYL PHOSPHONIC ACID OR
METHYLAMINOMETHYLPHOSPHONIC ACID OR N METHYL AMPA OR NSC
244826 OR PHOSPHONIC ACID METHYLAMINO METHYL OR PHOSPHONIC
ACID P METHYLAMINO METHYL

L7 QUE SPE=ON ABB=ON PLU=ON 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETH
YL PHOSPHONIC ACID OR 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETHYLPHOS
PHONIC ACID OR N GLYCERYL AMPA

L8 QUE SPE=ON ABB=ON PLU=ON 3 OXO 3 PHOSPHONOMETHYL AMINO
PROPANOIC ACID OR 3 OXO 3 PHOSPHONOMETHYL AMINOPROPANOIC ACID
OR N MALONYL AMPA

L9 QUE SPE=ON ABB=ON PLU=ON 993-13-5 OR DIHYDROGEN METHYLPHOSPH
ONATE OR METHANEPHOSPHONIC ACID OR METHYL PHOSPHONIC ACID OR
METHYLPHOSPHONIC ACID OR NSC 119358 OR PHOSPHONIC ACID METHYL
OR PHOSPHONIC ACID P METHYL

L10 QUE SPE=ON ABB=ON PLU=ON (L6 OR L7 OR L8 OR L9)
SAVE TEMP L10 GLY4/Q

L11 QUE SPE=ON ABB=ON PLU=ON 24569-83-3 OR 2 METHYL PHOSPHONOMET
HYL AMINO ACETIC ACID OR 2 METHYL PHOSPHONOMETHYL AMINOACETIC
ACID OR ACETIC ACID 2 N METHYL N PHOSPHONATOMETHYL AMINO OR
GLYCINE N METHYL N PHOSPHONOMETHYL OR GLYPHOSATE N METHYL OR
METHYL GLYPHOSATE

L12 QUE SPE=ON ABB=ON PLU=ON METHYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR METHYL PHOSPHONOMETHYL AMINOACETIC ACID OR N
METHYL N PHOSPHONOMETHYL GLYCINE OR N METHYLGLYPHOSATE OR N
PHOSPHONOMETHYL N METHYL GLYCINE OR N PHOSPHONOMETHYL N
METHYLGLYCINE

L13 QUE SPE=ON ABB=ON PLU=ON (L11 OR L12)
SAVE TEMP L13 GLY5/Q

L14 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
EYE? OR IRRIT? OR SENS? OR ALLERG?

L15 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?

L16 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
OR HORMON? OR GONAD? OR DISRUPT?

L17 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
OCCUPAT?

L18 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
RISK ASSESSMENT?

L19 QUE SPE=ON ABB=ON PLU=ON (L14 OR L15 OR L16 OR L17 OR L18)
SAVE TEMP L19 TOX/Q

L20 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING

L21 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?

L22 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE

L23 QUE SPE=ON ABB=ON PLU=ON (L20 OR L21 OR L22)
SAVE TEMP L23 RES/Q

L24 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR
SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER

L25 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT

L26 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR

- PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR
HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE
MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT
PROCESSES
- L27 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAIN
NS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR
OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER
OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR
PERSISTENCE OR LIGAND
- L28 QUE SPE=ON ABB=ON PLU=ON (L24 OR L25 OR L26 OR L27)
SAVE TEMP L28 FATE/Q
- L29 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR
?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR
BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR
EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR
PROTECTION GOALS OR ECO?
- L30 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY
OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC
OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS?
OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI?
OR ALG? OR CHIRON?
- L31 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR
LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR
INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR
APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR
- L32 QUE SPE=ON ABB=ON PLU=ON PLANT AND (SUBMERGE? OR EMERGE?)
- L33 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR
FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR
RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR
ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR
PARASITOID
- L34 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIU
S OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL?
OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR
MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR
NITROGEN
- L35 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR
SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR
ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB?
OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL
- L36 QUE SPE=ON ABB=ON PLU=ON (L29 OR L30 OR L31 OR L32 OR L33
OR L34 OR L35)
SAVE TEMP L36 ECO/Q

SESSION WILL BE HELD FOR 120 MINUTES

STN INTERNATIONAL SESSION SUSPENDED AT 13:58:53 ON 04 JAN 2021

Final search - Update Jan 2021:

- FILE 'MEDLINE' ENTERED AT 15:45:08 ON 05 JAN 2021
CHARGED TO COST=113898
- L1 4440 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L2 238 SEA SPE=ON ABB=ON PLU=ON L1 AND ED>20200702
- L3 237 SEA SPE=ON ABB=ON PLU=ON L2 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L3 GLYMEDL/A
- FILE 'AGRICOLA' ENTERED AT 15:50:40 ON 05 JAN 2021
CHARGED TO COST=113898
- L4 7335 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L5 125 SEA SPE=ON ABB=ON PLU=ON L4 AND ED>20200702
- L6 125 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L6 GLYAGRI/A
- FILE 'BIOSIS' ENTERED AT 15:53:45 ON 05 JAN 2021
CHARGED TO COST=113898
- L7 11508 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L8 348 SEA SPE=ON ABB=ON PLU=ON L7 AND ED>20200702
- L9 291 SEA SPE=ON ABB=ON PLU=ON L8 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L9 GLYBIOS/A
- FILE 'CABA' ENTERED AT 15:57:07 ON 05 JAN 2021
CHARGED TO COST=113898
- L10 19085 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L11 470 SEA SPE=ON ABB=ON PLU=ON L10 AND ED>20200702
- L12 470 SEA SPE=ON ABB=ON PLU=ON L11 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L12 GLYCABA/A
- FILE 'FSTA' ENTERED AT 15:59:47 ON 05 JAN 2021
CHARGED TO COST=113898
- L13 552 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L14 38 SEA SPE=ON ABB=ON PLU=ON L13 AND ED>20200702
- L15 37 SEA SPE=ON ABB=ON PLU=ON L14 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L15 GLYFSTA/A

FILE 'PQSCITECH' ENTERED AT 16:02:13 ON 05 JAN 2021

CHARGED TO COST=113898

L16 5521 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L17 95 SEA SPE=ON ABB=ON PLU=ON L16 AND ED>20200702
L18 95 SEA SPE=ON ABB=ON PLU=ON L17 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L18 GLYPQSCI/A

FILE 'TOXCENTER' ENTERED AT 16:11:40 ON 05 JAN 2021

CHARGED TO COST=113898

L19 17115 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L20 676 SEA SPE=ON ABB=ON PLU=ON L19 AND ED>20200702
L21 593 SEA SPE=ON ABB=ON PLU=ON L20 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L21 GLYTOXC/A

FILE 'EMBASE' ENTERED AT 16:20:46 ON 05 JAN 2021

CHARGED TO COST=113898

L22 5962 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L23 206 SEA SPE=ON ABB=ON PLU=ON L22 AND ED>20200702
L24 204 SEA SPE=ON ABB=ON PLU=ON L23 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L24 GLYEMBA/A

FILE 'ESBIOBASE' ENTERED AT 16:26:21 ON 05 JAN 2021

CHARGED TO COST=113898

L25 5219 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L26 201 SEA SPE=ON ABB=ON PLU=ON L25 AND ED>20200702
L27 200 SEA SPE=ON ABB=ON PLU=ON L26 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L27 GLYESBIO/A

FILE 'HCAPLUS' ENTERED AT 16:38:29 ON 05 JAN 2021

CHARGED TO COST=113898

L28 29905 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L29 745 SEA SPE=ON ABB=ON PLU=ON L28 AND ED>20200702
L30 504 SEA SPE=ON ABB=ON PLU=ON L29 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L30 GLYHCAP/A

FILE 'SCISEARCH' ENTERED AT 16:42:42 ON 05 JAN 2021

CHARGED TO COST=113898

L31 12468 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L32 543 SEA SPE=ON ABB=ON PLU=ON L31 AND ED>20200702
L33 541 SEA SPE=ON ABB=ON PLU=ON L32 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/D
T
SAVE TEMP L33 GLYSCIS/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 16:47:56 ON 05 JAN 2021

CHARGED TO COST=113898

L34 1797 DUP REM L3 L6 L9 L12 L15 L18 L21 L24 L27 L30 L33 (1500 DUPLICAT
ANSWERS '1-236' FROM FILE MEDLINE
ANSWERS '237-361' FROM FILE AGRICOLA
ANSWERS '362-577' FROM FILE BIOSIS
ANSWERS '578-964' FROM FILE CABA
ANSWERS '965-987' FROM FILE FSTA
ANSWERS '988-1034' FROM FILE PQSCITECH
ANSWERS '1035-1297' FROM FILE TOXCENTER
ANSWERS '1298-1370' FROM FILE EMBASE
ANSWERS '1371-1412' FROM FILE ESBIOBASE
ANSWERS '1413-1579' FROM FILE HCAPLUS
ANSWERS '1580-1797' FROM FILE SCISEARCH
SAVE L34 GLY202101/A
L35 1437 SEA SPE=ON ABB=ON PLU=ON L34 AND TOX/Q
SAVE TEMP L35 GLYTOX/A
L36 1581 SEA SPE=ON ABB=ON PLU=ON L34 AND RES/Q
SAVE TEMP L36 GLYRES/A
L37 1062 SEA SPE=ON ABB=ON PLU=ON L34 AND FATE/Q
SAVE TEMP L37 GLYFATE/A
L38 1676 SEA SPE=ON ABB=ON PLU=ON L34 AND ECO/Q
SAVE TEMP L38 GLYECO/A
L39 1781 SEA SPE=ON ABB=ON PLU=ON (L35 OR L36 OR L37 OR L38)
SAVE L39 GLY202101FIN/A

SESSION WILL BE HELD FOR 120 MINUTES

STN INTERNATIONAL SESSION SUSPENDED AT 18:07:02 ON 05 JAN 2021

Literature Review Report

**Scientific peer-reviewed open literature covering the
publication period of January 2021 to 14 May 2021 for the
approval of pesticide active substance glyphosate and
metabolites**

**as under Article 8(5) of Regulation (EC) No 1107/2009
(Ref. EFSA Journal 2011; 9(2) 2092)**

Report number

113898-CA9-3

Author

Anonymous, 2022

Sponsor

Bayer Agriculture BV

(on behalf of the Glyphosate Renewal Group, AIR5)

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Reporting Date

28 April 2022

Date of search(es):

14 May 2021

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1 Summary

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document (GD) - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”, and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG)⁵ on how to present the literature search in the dossier has been followed. Please refer to **Appendix 1** (page 63) for more details.

This Literature Review Report summarizes the search and evaluation of the glyphosate scientific peer-reviewed open literature covering the publication period of January 2021 to 14 May 2021 and is supplementary to the previous searches covering the publication period of January 2010 to December 2020.⁶

The literature search was conducted accessing 11 bibliographic databases via the service provider STN.

In total, 597 articles were identified upon removal of duplicates within the current search (January 2021 to 14 May 2021) and articles found already in the previous searches (January 2010 to December 2020).

All 597 articles were subsequently assessed for their relevance at title/abstract level (“rapid assessment” according to the procedure and requirements stated in the EFSA 2092 GD).

A total of 523 of the 597 articles were identified as “non-relevant” in the rapid assessment (e.g. publications dealing with chemical synthesis, efficacy, analytical methods or publications which are not related to glyphosate or its metabolites) and excluded from further evaluation. Due to the large quantity of data, and as agreed with the AGG, the list of articles and the justification for their non-relevance is provided in a standalone Literature Review Excel File (Document ID: 113898_CA9-3_Literature Review Excel File).

For the remaining 74 articles, identified as potentially “relevant” or of “unclear relevance” in the rapid assessment, the full-text documents⁷ were reviewed in detail (“detailed assessment”).

¹ (aminomethyl)phosphonic acid (AMPA), N-acetyl-AMPA, N-acetyl-glyphosate, (hydroxymethyl)phosphonic acid (HMPA), N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA, methylphosphonic acid and N-methylglyphosate.

² European Food Safety Authority, 2011: *Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) No 1107/2009*. EFSA Journal 2011;9(2):2092. 49 pp, doi:10.2903/j.efsa.2011.2092.

³ Appendix to EFSA Journal 2011;9(2):2092. *Further guidance on performing and presenting the literature search*. Available online: <https://efsa.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.2903/j.efsa.2011.2092&file=efs22092-sup-0001-Appendix.pdf>

⁴ European Food Safety Authority, 2019. *Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*. EFSA supporting publication 2019:EN-1612. 49 pp., doi:10.2903/sp.efsa.2019.EN-1612.

⁵ On 10th May 2019, the European Commission appointed four Member States (France, Hungary, the Netherlands and Sweden) to act jointly as 'rapporteurs' for the AIR5 process assessment of glyphosate. This group of Member States is known as the Assessment Group on Glyphosate (AGG).

⁶ See Literature Review Reports 108689-CA9-1, 113898-CA9-1 and 113898-CA9-2 for more details.

⁷ All articles used within the glyphosate dossier have been purchased via Copyright Clearance Centre. In some cases, please note that the Copyright Clearance is not overtly visible, and in some instances is part of the article documents. Should the Copyright Clearance proof be required, this can be provided upon request.

A total of 28 articles of the remaining 74 articles were identified as “non-relevant” in the detailed assessment and were excluded from further evaluation. The list of the articles and the justification for their non-relevance is provided in **Table 38** of this Literature Review Report document.

The remaining 46 articles of the 74 articles were identified as “relevant” in the detailed assessment and were classified according to the EFSA 2092 GD (EFSA Journal 2011;9(2):2092, Point 5.4.1).

Category A Articles which provide data for establishing or refining risk assessment parameters. For all articles of Category A, a reliability assessment was performed as recommended in the EFSA 2092 GD. In addition, summaries were compiled for Category A articles classified as “reliable” or “reliable with restrictions”. The list of these Category A & reliable / reliable with restrictions articles can be found in **Table 32** and **Table 33** of this Literature Review Report document.

Category B Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment. A justification for such decision is provided as recommended in the EFSA 2092 GD. The list of these Category B articles and the justifications can be found in **Table 34** and **Table 35** of this Literature Review Report document.

Category C Articles for which relevance cannot be clearly determined. As recommended in the EFSA 2092 GD, an explanation is provided why the relevance could not be determined. The list of these Category C articles and the explanations can be found in **Table 36** and **Table 37** of this Literature Review Report document.

The full outcome of the literature evaluation is provided in **Table 1**.

Table 1: Summary of the literature review

Section	Number of articles found	Rapid assessment (title/abstract level)		Detailed assessment (full-text level)	
		non-relevant articles	potentially relevant / unclear relevance	non-relevant articles	relevant articles (Category A+B+C)
Efficacy / Agronomy ^{a)}	248	248	n.a.	n.a.	n.a.
Analytical methods ^{a)}	29	29	n.a.	n.a.	n.a.
Other non-relevant categories ^{b)}	54	54	n.a.	n.a.	n.a.
Ecotoxicology	93	61	32	19	13
E-fate	79	74	5	1	4
Residues	18	10	8	3	5
Toxicology	76	47	29	5	24
Total	597	523	74	28	46

^{a)} Efficacy / Agronomy (e.g. reporting desired effects on organisms to be controlled) and development of analytical methods (artificial measurements) do not provide information useful/required for the environmental or human safety risk assessment.

^{b)} The category "other non-relevant categories" covers a wide range of scientific publications which are not related to glyphosate or its metabolites or are not related to exposure of humans or the environment to glyphosate or its metabolites and thus not relevant for the risk assessments.

The full outcome of the relevant articles after detailed (full-text) assessment is provided in **Table 2**.

Table 2: Relevant articles by full-text classified according to the EFSA 2092 GD, Point 5.4.1

Section	Relevant articles by full-text (EFSA 2092 GD, Point 5.4.1)		
	Category A ^{a)}	Category B ^{b)}	Category C ^{c)}
Ecotoxicology	3	8	2
E-fate	3	1	0
Residues	0	5	0
Toxicology	4	15	5
Total	10	29	7

^{a)} Category A: Articles which provide data for establishing or refining risk assessment parameters.

^{b)} Category B: Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment.

^{c)} Category C: Articles for which relevance cannot be clearly determined.

All articles (and their translations) evaluated at full text level (detailed assessment) **were submitted** to the AGG in a Portable Document Format (PDF).

Please refer to **Appendix 2** (page 64) to see the article selection process in detail.

2 Introduction

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”², and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA Supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG) on how to present the literature search in the dossier has been followed. Please refer to **Appendix 1** (page 63) for more details.

In June 2020, a Literature Review Report (Document ID: 108689-CA9-1) summarizing results of the search of the glyphosate scientific peer-reviewed open literature published from January 2010 to December 2019 was submitted to the AGG as part of the glyphosate AIR5 dossier. In July 2020 during the dossier completeness check (point 23)⁸, the AGG requested a top-up search for glyphosate open literature covering the publication period of January 2020 to June 2020. In October 2020, a Literature Review Report (Document ID: 113898-CA9-1) summarizing results of this top-up search was submitted to the AGG.

Furthermore, two additional supplementary literature searches of the glyphosate scientific peer-reviewed open literature were performed in January 2021 and in May 2021. The first search, from January 2021, covers the publication period of July 2020 to December 2020 and is summarized in the Literature Review Report Document ID: 113898-CA9-2. The second search, from May 2021, covers the publication period of January 2021 to 14 May 2021 and is summarized in this Literature Review Report (Document ID: 113898-CA9-3). Details for this search are provided below.

The search has been conducted via the online service provider STN (www.stn-international.de) that provides access to a broad range of databases and to published research, journal literature, patents, structures, sequences, properties, and other data.

To offer a comprehensive literature search covering the requirements of the EFSA 2092 GD eleven databases have been used: AGRICOLA, BIOSIS, CABA, HCAPLUS, EMBASE, ESBIODATABASE, MEDLINE, TOXCENTER, FSTA, PQSCITECH, and SCISEARCH.

Please refer to **Table 3** for more details on the literature search.

⁸ AGG’s letter dated 10-July-2020, subject “Glyphosate: Check of completeness of the supplementary dossier for renewal of approval under Commission Implementing Regulation (EU) No 844/2012”, section 2: Elements to be submitted in accordance with Article 11(5) of Regulation (EU) No 844/2012, point 23.

Table 3: Overview of the search conducted for glyphosate and its metabolites

Performed for	Covering publication period	Conducted on
Glyphosate AMPA N-acetyl-AMPA N-acetyl-glyphosate HMPA N-methyl-AMPA N-glyceryl-AMPA N-malonyl-AMPA methylphosphonic acid N-methylglyphosate	January 2021 – 14 May 2021	14 May 2021

AMPA = (aminomethyl)phosphonic acid
 HMPA = (hydroxymethyl)phosphonic acid

A “focused search for grouped data requirements”⁹ have been performed (a combination of a substance basic input parameters, keywords and “search filters” defined for the four technical sections – toxicology, residues, environmental fate, and ecotoxicology).

Please refer to **Chapter 2.2** and **2.3** (pages 14 and 16) for the input parameters, keywords and search filters used in the literature search.

Regarding details on the bibliographic databases used in the literature search, please refer to **Chapter 2.1 (Table 4)**.

Regarding the number of articles retrieved in the literature search, please refer to **Chapter 2.1 (Table 5)**.

For the relevance and reliability assessment, please refer to **Chapter 2.4** and **2.5** (pages 19 and 22).

For the full outcome of the literature search and for the individual technical sections, please refer to **Chapter 3** (page 27).

⁹ Citation from the EFSA 2092 Guidance Document: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

2.1 Bibliographic databases used in the literature search

Table 4: Overview of the databases used in the literature search

Data requirement(s) captured in the search	Details of the search(es)			
	1. AGRICOLA	2. BIOSIS	3. CABA	4. HCAPLUS
Justification for choosing the source:	Provides literature from agriculture and related fields, e.g. biology, biotechnology, botany, ecology etc.	Provides the most comprehensive and largest life science literature, e.g. biosciences, biomedicine etc.	Provides literature from agriculture and related sciences, e.g. biotechnology, forestry, veterinary medicine etc.	Provides literature from chemistry and related fields, e.g. biochemistry, chemical engineering etc.
Number of records in the database at the time of search:	> 7.1 million (09/2020)	> 27.8 million (04/2019)	> 9.9 million (09/2020)	> 57.0 million (01/2022)
Database update:	Monthly	Weekly	Weekly	Daily updates bibliographic data; weekly updates indexing data
Date of the search:	14 May 2021	14 May 2021	14 May 2021	14 May 2021
Database covers records:	1970-present	1926-present	1973-present	1907-present and more than 180,000 pre-1907
Date of the latest database update:	6 May 2021	12 May 2021	12 May 2021	13 May 2021
Language limit:	No	No	No	No
Document types <u>excluded</u> that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	264	258	467	343

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)		
	5. MEDLINE	6. EMBASE	7. TOXCENTER
Justification for choosing the source:	Provides literature from every area of medicine.	Provides literature from biomedical and pharmaceutical fields, e.g. bioscience, biochemistry, human medicine, forensic science, paediatrics, pharmacy, pharmacology, drug therapy, psychiatry, public health, biomedical engineering, environmental science.	Provides literature on pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals.
Number of records in the database at the time of search:	> 33.5 million (01/2022)	> 34.3 million (08/2018)	> 16.2 million (01/2022)
Database update:	Six times each week, with an annual reload	Daily	Weekly
Date of the search:	14 May 2021	14 May 2021	14 May 2021
Database covers records:	1946-present	1974-present	1907-present
Date of the latest database update:	13 May 2021	13 May 2021	10 May 2021
Language limit:	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .		
Total number of records retrieved:	181	127	383

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)			
	8. FSTA	9. PQSCITECH	10. ESBIODBASE	11. SCISEARCH
Justification for choosing the source:	Provides literature on scientific and technological aspects of the processing and manufacture of human food products, e.g. biotechnology, hygiene and toxicology, engineering etc.	Provides a valuable and huge resource of literature (merge of 25 STN databases) from all science areas and technology; from engineering to lifescience.	Provides comprehensive literature on entire spectrum of biological and biosciences research, e.g. microbiology, biotechnology, ecological & environmental sciences, genetics, plant and crop science, toxicology and many more.	Provides one of the largest multidisciplinary scientific literature covering a broad field of sciences, technology, and biomedicine.
Number of records in the database at the time of search:	> 1.59 million (09/2020)	> 33.6 million (01/2021)	> 9.0 million (01/2021)	> 47.7 million (08/2019)
Database update:	Weekly	Monthly	Weekly	Weekly
Date of the search:	14 May 2021	14 May 2021	14 May 2021	14 May 2021
Database covers records:	1969-present	1962-present	1994-present	1974-present
Date of the latest database update:	14 May 2021	29 Apr 2021	12 May 2021	10 May 2021
Language limit:	No	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	30	74	162	354

Table 5: Total number of articles retrieved

Scope of the search	After automatic removal of duplicates within the databases in the current search (Jan 2021 – 14 May 2021)	After applying search filters ^{a)} within the current search (Jan 2021 – 14 May 2021)	After manual removal of duplicates ^{b)} within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020) ^{c)}
Jan 2021 – 14 May 2021 Glyphosate AMPA N-acetyl-AMPA N-acetyl-glyphosate HMPA N-methyl-AMPA N-glyceryl-AMPA N-malonyl-AMPA methylphosphonic acid N-methylglyphosate	1522	1517	597

^{a)} Search filters applied for the four technical sections (residues, environmental fate, toxicology and ecotoxicology). Please refer to **Chapter 2.3** for more details (page 16).

^{b)} Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{c)} Please refer to the Literature Review Report (LRR) 108689-CA9-1, 113898-CA9-1, and 113898-CA9-2.

Note: LRR 108689-CA9-1 covers the publication period of 1 January 2010 to 31 December 2019, LRR 113898-CA9-1 covers the publication period of 1 January 2020 to 30 June 2020, and LRR 113898-CA9-2 covers the publication period of 1 July 2020 to 31 December 2020.

2.2 Input parameters used in the literature search

The basic input parameters used in the literature search, e.g. IUPAC, chemical name or CAS number, are provided in **Table 6 - Table 15**.

Table 6: Input parameters – active substance Glyphosate

Substance name	Glyphosate Salts: isopropylamine, potassium, ammonium, methylmethanamine
IUPAC / CA name	2-(phosphonomethylamino)acetic acid
CAS number(s)	1071-83-6 Salts: 38641-94-0, 70901-12-1, 39600-42-5, 69200-57-3, 34494-04-7, 114370-14-8, 40465-66-5, 69254-40-6

Table 7: Input parameters – metabolite AMPA

Substance name	AMPA
IUPAC / CA name	(aminomethyl)phosphonic acid
CAS number(s)	1066-51-9

Table 8: Input parameters – metabolite N-acetyl glyphosate

Substance name	N-acetyl glyphosate
IUPAC / CA name	N-acetyl-N-(phosphonomethyl)glycine
CAS number(s)	129660-96-4

Table 9: Input parameters – metabolite N-acetyl AMPA

Substance name	N-acetyl AMPA
IUPAC / CA name	[(acetylamino)methyl]phosphonic acid
CAS number(s)	57637-97-5

Table 10: Input parameters – metabolite HMPA

Substance name	HMPA
IUPAC / CA name	(hydroxymethyl)phosphonic acid
CAS number(s)	2617-47-2

Table 11: Input parameters – metabolite N-methyl AMPA

Substance name	N-methyl AMPA
IUPAC / CA name	[(methylamino)methyl]phosphonic acid
CAS number(s)	35404-71-8

Table 12: Input parameters – metabolite N-glyceryl AMPA

Substance name	N-glyceryl AMPA
IUPAC / CA name	(2,3-dihydroxypropanoylamino)methylphosphonic acid
CAS number(s)	No data

Table 13: Input parameters – metabolite N-malonyl AMPA

Substance name	N-malonyl AMPA
IUPAC / CA name	3-oxo-3-(phosphonomethylamino)propanoic acid
CAS number(s)	no data

Table 14: Input parameters – metabolite methylphosphonic acid

Substance name	methylphosphonic acid
IUPAC / CA name	methylphosphonic acid
CAS number(s)	993-13-5

Table 15: Input parameters – metabolite N-methylglyphosate

Substance name	N-methylglyphosate
IUPAC / CA name	2-[methyl(phosphonomethyl)amino]acetic acid
CAS number(s)	24569-83-3

2.3 Keywords and search filters used in the literature search

The approach used for the search was the “focused search for grouped data requirements”¹⁰, which combines the active substance and metabolite basic input parameters, keywords and search filters defined for each technical section. Please refer to **Table 16** for more details on the keywords used and to **Table 17 - Table 20** for the search filters.

Table 16: Keywords used for the active substance glyphosate and its metabolites

Gly1: Glyphosate and AMPA	glyphosat? OR glifosat? OR glyfosat? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR aminomethyl phosphonic OR aminomethylphosphonic OR 1066-51-9
Gly2: N-acetyl glyphosate and N-acetyl AMPA	2 acetyl phosphonomethyl amino acetic acid OR n acetyl glyphosate OR n acetyl glyphosate OR n acetyl n phosphonomethyl glycine OR 129660-96-4 OR n acetyl ampa OR acetyl amino methyl phosphonic acid OR acetylaminomethyl phosphonic acid OR 57637-97-5
Gly 3: HMPA	2617-47-2 OR hydroxymethanephosphonic acid OR hydroxymethyl phosphonate OR hydroxymethylphosphonate OR hydroxymethyl phosphonic acid OR hydroxymethylphosphonic acid OR methanhydroxyphosphonic acid OR phosphonic acid(1w)hydroxymethyl OR phosphonomethanol
Gly 4: N-methyl AMPA	35404-71-8 OR methylamino methyl phosphonic acid OR methylaminomethyl phosphonic acid OR methylaminomethylphosphonic acid OR n methyl ampa OR nsc 244826 OR phosphonic acid methylamino methyl OR phosphonic acid p methylamino methyl
Gly 4: N-glyceryl AMPA	2 3 dihydroxy 1 oxopropyl aminomethyl phosphonic acid OR 2 3 dihydroxy 1 oxopropyl aminomethylphosphonic acid OR n glyceryl ampa
Gly 4: N-malonyl AMPA	3 oxo 3 phosphonomethyl amino propanoic acid OR 3 oxo 3 phosphonomethyl aminopropanoic acid OR n malonyl ampa
Gly 4: methylphosphonic acid	993-13-5 OR dihydrogen methylphosphonate OR methanephosphonic acid OR methyl phosphonic acid OR methylphosphonic acid OR nsc 119358 OR phosphonic acid methyl OR phosphonic acid p methyl
Gly 5: N-methylglyphosate (NMG)	24569-83-3 OR 2 methyl phosphonomethyl amino acetic acid OR 2 methyl phosphonomethyl aminoacetic acid OR acetic acid 2 n methyl n phosphonatomethyl amino OR glycine n methyl n phosphonomethyl OR glyphosate n methyl OR methyl glyphosate OR methyl phosphonomethyl amino acetic acid OR methyl phosphonomethyl aminoacetic acid OR n methyl n phosphonomethyl glycine OR n methylglyphosate OR n phosphonomethyl n methyl glycine OR n phosphonomethyl n methylglycine

(1w) = proximity operator (this order, up to 1 word between)

AND / OR / NOT = boolean search operators

? = any character(s)

¹⁰ Citation from the EFSA 2092 GD: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

Table 17: Search filters related to the technical section toxicology

Toxicology
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
tox? OR hazard? OR adverse OR health OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR in vivo OR in vitro OR invivo OR invitro OR mode of action OR skin? OR eye? OR irrit? OR sensi? OR allerg? OR rat OR rats OR dog? OR rabbit? OR guinea pig? OR mouse OR mice OR metabolism OR metabolite? OR metabolic OR distribution OR adsorption OR excretion OR elimination OR kinetic OR cytochrome OR enzym? OR gen? OR muta? OR chromos? OR clastogen? OR DNA OR carcino? OR cancer? OR tumor? OR tumour? OR oncog? OR oncol? OR malign? OR immun? OR neur? OR endocrin? OR hormon? OR gonad? OR disrupt? OR reproduct? OR development? OR malform? OR anomal? OR fertil? OR foet? OR fet? OR matern? OR pregnan? OR embryo? OR epidem? OR medical? OR poison? OR exposure OR operator? OR bystander? OR resident? OR worker? OR occupat? biomonitoring OR human exposure OR microbiome OR oxidative stress OR apoptosis OR necrosis OR cytotoxicity OR Polyoxyethyleneamine OR POEA OR surfactant OR risk assessment?

Table 18: Search filters related to the technical section residues

Residues
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
uptake OR translocation OR rumen OR storage stability OR storage OR stability OR metabolic OR metabolism OR breakdown OR nature of residues OR residue? OR magnitude of residues OR process? OR effects of processing OR dessicant OR preharvest OR preemerg? OR ?resistant? OR ?toleran? OR transgenic OR hydroly? OR rotation? OR succeed? OR plant? OR crop? OR feed? OR animal? OR livestock? OR hen OR cattle OR ruminant? OR goat? OR cow? OR pig? OR dietary OR assessment OR risk assessment OR consum? OR exposure

Table 19: Search filters related to the technical section environmental fate

Environmental fate
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
soil OR water OR sediment OR degradat? OR photo? OR soil residues OR soil accumulat? OR soil contaminat? OR mobility OR sorption OR column leaching OR aged residue OR leach? OR lysimeter OR groundwater OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR transport OR micronutrient OR phosphate OR iron OR manganese OR half-life OR halflife OR half-lives OR halflives OR DT50 OR kinetics OR off-site movement OR removal OR drinking water OR water treatment processes OR atmospheric deposition OR tile-drains OR surface water OR monitoring data OR disinfectant OR ozone OR tillage OR infiltration OR hard surface OR rainwater OR rain water OR chelat? OR complex? OR mineralization OR persistence OR ligand

Table 20: Search filters related to the technical section ecotoxicology

Ecotoxicology [Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR plant AND submerge? OR emerge? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator OR solitary OR alg? OR aquatic OR freshwater OR vertebrat? OR mammal? OR rat OR mouse OR mice OR rabbit OR hare OR protection OR model? OR vole OR pest OR arthropod? OR beneficials OR typhlodromus OR aphidius OR parasitoid OR predator OR chrysoperla OR Orius OR spider OR worm? OR ?worm OR Eisenia OR soil OR collembol? OR macro organism OR folsomia OR springtail OR decompos? OR micro organisms OR microorganisms OR microbial OR carbon OR nitrogen OR plant? OR vegetative vigo? OR seedling OR germination OR monocot? OR dicot? OR sewage OR activated sludge OR biodegrad? OR bioaccumulation? OR amphib? OR reptile? OR aquatic plant OR beneficial

2.4 Relevance assessment

After removal of duplicates, the remaining articles were assessed for their relevance. First, at “title / abstract level” (so-called “rapid assessment”) and second, at “full-text level” (so called “detailed assessment”).

Articles that were identified as “non-relevant” in the rapid assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For articles that were not excluded in the rapid assessment (potentially relevant articles and articles of an unclear relevance) a detailed relevance assessment of a full-text document was performed.

Articles that were identified as “non-relevant” in the detailed assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For both assessments (rapid and detailed) the same criteria for non-relevance were applied (see **Chapter 2.4.1** and **2.4.2**).

2.4.1 Criteria applied for “non-relevance”

Articles identified as “non-relevant” in the rapid and detailed assessments belong to one of the following categories and were excluded from further evaluation. A justification for their non-relevance was provided.

- Publications related to efficacy (resistance related articles, new uses of control of pest / crops) or to agricultural / biological research (crop science, breeding, fertilization, tillage, fundamental plant physiology / micro- / molecular biology).
- Publications dealing with analytical methods / development.
- Publications describing new methods of synthesis (discovery / developments) or other aspects of basic (organic / inorganic) chemistry.
- Patents.
- Wastewater treatment.
- Abstracts referring to a conference contribution that does not contain sufficient data / information for regulatory risk assessment.
- Publications focusing on genetically modified organisms / transgenic crops; no data directly relevant to glyphosate evaluation (e.g. crop compositional analysis, gene flow, protein characterization).
- Publications where glyphosate or a relevant metabolite were not the focus of the publication.
- Secondary information including scientific and regulatory reviews¹¹.
- Articles dealing with political / socio / economic analysis.
- Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity).
- Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes.
- Findings not related to ecotoxicology, toxicology, residues, and environmental fate.
- Publications not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.).

¹¹ Reviews have been partly evaluated on full text level as well – case by case decision.

- Publications dealing with a Roundup¹² formulation / other glyphosate formulations that is not the representative formulation for the AIR5 dossier and thus not relevant to the EU glyphosate renewal.
- Publications dealing with general pesticide exposures (not glyphosate specific).
- Publications generating endpoints that are not relatable to the EU level regulatory risk assessment (e.g. findings based on enzyme, cellular and molecular level etc.).
- Opinion articles where no new data is provided that can be used for the EU regulatory risk assessment.

2.4.2 Additional criteria for articles on the health and exposure of glyphosate

The scientific literature on the health effects of glyphosate can be subdivided in two main parts:

- Articles containing data on glyphosate acid and salts and on the reference glyphosate formulation MON 52276, and
- Articles only containing data on glyphosate formulations and/or co-formulants that have a composition different from that of the reference formulation MON 52276.

In the case of articles only relating to glyphosate formulations *in vitro* testing with the exception of cell/tissue systems¹³ that are likely to come in direct contact with formulations and glyphosate formulations containing other active ingredients are excluded. The reason for the exclusion of *in vitro* testing of formulations to assess health effects as a result of systemic exposure is the presence of surfactants which produce cell toxicity based on the destabilization of the cell membrane and the mitochondrial membrane thus masking the specific toxicity of glyphosate. The toxicity of the co-formulants in combination with glyphosate is dependent on the concentration and the nature of the co-formulants and can be addressed on a case-by-case basis during the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

In the relevance of glyphosate data, those articles have been considered as not relevant (and reliable) for the assessment for systemic toxicity when only *in vitro* results are presented with glyphosate concentrations above 1 mM. This is because it is physiologically not possible to attain such concentrations in standard regulatory *in vivo* testing due to the limited oral bioavailability (approx. 20%), very low dermal absorption, and rapid systemic elimination of glyphosate in *in vivo* test systems. It thus makes no sense to include such data in the risk assessment of glyphosate. Exceptions can be made in the event of direct contact with formulations resulting in localized effects, but then there is the contribution of the toxicity of the co-formulants which can be better addressed in the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

¹² Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contains a surfactant polyethoxylated tallow amine (also polyoxyethyleneamine, POEA) which is not permitted for use in the EU. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in articles dealing with POEA based Roundup formulations cannot be related to the representative formulation MON 52276 which is quaternary-ammonium based (and not POEA based).

¹³ Glyphosate-based herbicides (GBH) contain surfactants that destabilize the cell membrane and the mitochondrial membrane and thus produce a toxicity that is not representative for glyphosate (see Levine S. L. et al, *Cell Biol. Toxicol.* (2007) 23:385-400). This has been clearly demonstrated in the scientific literature and also in some papers reviewed for this submission where *in vitro* glyphosate toxicity is compared against that of GBH and surfactants.

The limit of 1 mM has been based on the single dose oral pharmacokinetic data of a formulation containing 71.7% w/w glyphosate where an oral dose of 1,430 mg/kg bw in the rat gives plasma levels of 38.1 µg/mL or 0.225 mM after 2 hours. When extrapolated linearly (which is possible for glyphosate because it is not subject to hepatic metabolism) this gives plasma levels of 53.3 µg/mL or 0.315 mM at 2 hours after oral intake of 2,000 mg/kg bw and 107 µg/mL or 0.630 mM at 2 hours after oral intake of 4,000 mg/kg bw. A systemic concentration of glyphosate of 1 mM would then represent an oral dose of more than 6,000 mg/kg bw which is completely unreasonable for repeat dose experimental *in vivo* testing under today's OECD test guidelines. The ADI for glyphosate of 0.5 mg/kg bw/day corresponds with a daily systemic concentration of 0.17 µg/mL or 1 µM when a 60 kg person with 36 L extracellular fluid is considered with a glyphosate oral bioavailability of 20%. The daily systemic dose of glyphosate on the day of application (i.e. highest exposure day), based on the geometric mean of 3.2 µg/L in urine, of glyphosate applicators in the US is approx. 0.0001 mg/kg bw/day (Acquavella, 2004¹⁴) which is 1000 times less than the systemic dose (0.1 mg/kg bw) corresponding with the ADI oral dose of 0.5 mg/kg bw with 20% oral bioavailability.

Many articles that have been considered relevant for the risk assessment of glyphosate and have been assessed for reliability on full text basis, contain experimental data as well on glyphosate as such as on formulations (different from MON 52276) and co-formulants. In such cases, only the toxicology data pertinent to glyphosate and to the reference formulation (if that can be clearly stated by the author of the article) are summarized and discussed. In the case of articles on exposure monitoring and epidemiology, exposure to glyphosate formulations are considered.

2.4.3 Categorization of “relevant” articles at full-text level

Articles that were not excluded in the detailed assessment (see **Chapter 2.4.1** and **2.4.2**) were categorized as recommended in the EFSA 2092 GD - EFSA Journal 2011;9(2):2092, Point 5.4.1.

Category A *Studies that provide data for establishing or refining risk assessment parameters. These studies should be summarised in detail following the subsequent steps of the OECD Guidance documents (OECD, 2005; 2006) and should be considered for reliability.*

Category B *Studies that are relevant to the data requirement, but in the opinion of the applicant provide only supplementary information that does not alter existing risk assessment parameters. A justification for such a decision should be provided.*

Category C *Studies for which relevance cannot be clearly determined. For each of these studies the applicants should provide an explanation of why the relevance of such studies could not be definitively determined.*

The list of Category A articles can be found in **Table 32** and **Table 33**. The list of Category B articles and the justifications can be found in **Table 34** and **Table 35**. The list of Category C articles and the explanations can be found in **Table 36** and **Table 37**.

All articles (and their translations) evaluated at full text level (detailed assessment) were submitted to the AGG in a Portable Document Format (PDF).

¹⁴ Acquavella J. F. *et al.* (2004), Environmental Health Perspectives, 112(3), 321-326.

2.5 Reliability assessment

For articles, which were identified, in the detailed assessment, as relevant articles of Category A (see **Chapter 2.4.3**) a reliability assessment was performed. The reliability criteria for each technical section are summarized in **Table 21 - Table 23**.

For relevant articles of Category A that were classified either as reliable (without restrictions) or reliable with restrictions, summaries were compiled.

Articles of Category A which were classified as non-reliable were downgraded to articles of Category B and justification for such a decision was provided.

Table 21: Reliability criteria for ecotoxicology, environmental fate and residues

Applied for	Reliability criteria
Ecotoxicology, Environmental Fate, Residues	For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines are met.
Ecotoxicology, Environmental Fate, Residues	(No) previous exposure to other chemicals is documented (where relevant).
Ecotoxicology	For aquatic studies, the test substance is dissolved in water or where a carrier is required, it is appropriate (non-toxic) and a carrier control / positive control is considered in the test design.
Environmental Fate, Residues	The test substance is dissolved in water or non-toxic solvent.
Ecotoxicology, Environmental Fate, Residues	Test item is sufficiently documented, and reported (i.e. purity, source, content, storage conditions).
Ecotoxicology	For tests including vertebrates, compliance of the batches used in toxicity studies compared to the technical specification.
Ecotoxicology	Species used in the experiment are clearly reported, including source, experimental conditions (where relevant): strain, adequate age/life stage, body weight, acclimatization, temperature, pH, oxygen (dissolved oxygen for aquatic tests) content, housing, light conditions, humidity (terrestrial species) incubation conditions, feeding.
Ecotoxicology	The validity criteria from relevant test guidelines can be extrapolated across different species but not necessarily across different test designs. If different, then the nature of the difference and impact should ideally be discussed.
Ecotoxicology, Environmental Fate, Residues	Only glyphosate or its metabolites is the test substance (excluding mixture), and information on application of the test substance is described.
Ecotoxicology, Environmental Fate, Residues	The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite).
Ecotoxicology, Environmental Fate, Residues	Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
Ecotoxicology, Environmental Fate, Residues	Analytical verifications performed in test media (concentration) / collected samples, stability of the test substance in test medium should be documented.

Applied for	Reliability criteria
Ecotoxicology	The test has been performed in several dose levels (at least 3) including a positive / negative control where relevant.
Ecotoxicology	Suitable exposure throughout the whole exposure period was demonstrated and reported.
Ecotoxicology	A clear concentration response relationship is reported – in studies where the dose response test design is employed.
Ecotoxicology	A sufficient number of animals per group to facilitate statistical analysis reported: mortality in control groups reported, observations/findings in positive/negative control clearly reported (where relevant).
Ecotoxicology, Environmental Fate, Residues	Assessment of the statistical power of the assay is possible with reported data.
Ecotoxicology, Environmental Fate, Residues	Statistical methodology is reported (e.g., checking the plots and confidence intervals).
Ecotoxicology	Description of the observations (including time-points), examinations, and analyses performed, with (where relevant) dissections being well documented.
Ecotoxicology	For terrestrial ecotoxicological studies in the laboratory or the field, the substrates used should be adequately described e.g. nature of substrate i.e. species of leaf or soil type.
Ecotoxicology, Environmental Fate, Residues	Field locations relevant / comparable to European conditions.
Ecotoxicology, Environmental Fate, Residues	Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon).
Ecotoxicology, Environmental Fate	Other soils where information on characterization by the parameters: pH, texture, CEC, organic carbon, bulk density, water holding capacity, microbial biomass.
Ecotoxicology, Environmental Fate, Residues	For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year.
Ecotoxicology, Environmental Fate	For soil samples, sampling from A-horizon, top 20 cm layers; soils freshly from field preferred (storage max 3 months at 4 +/- 2°C).
Ecotoxicology, Environmental Fate, Residues	Data on precipitation is recorded.
Environmental Fate	The temperature was in the range between 20-25°C and the moisture was reported.
Environmental Fate	The presence of glyphosate identified in samples were collected from European groundwater, soil, surface waters, sediments or air.
Ecotoxicology	For lab terrestrial studies, the temperature was appropriate to the species being tested and generally should fall within the range between 20-25°C and soil moisture / relative humidity was reported.
Ecotoxicology	For bee studies, temperature of the study should be appropriate to species.
Ecotoxicology	For lab aquatic studies:
	The source and / or composition of the media used should be described.
	The temperature of the water should be appropriate to the species being tested and generally fall within the 15-25°C.

Applied for	Reliability criteria
Ecotoxicology, Residues	The residue data can be linked to a clearly described GAP table, appropriate in the context of the renewal of approval of glyphosate (crop, application method, doses, intervals, PHI).
Ecotoxicology, Environmental Fate, Residues	Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate, and where relevant its metabolites.
Ecotoxicology, Environmental Fate, Residues	Analytical methods are clearly described; and adequate statement of specificity and sensitivity of the analytical methods is included.
Ecotoxicology	Assessment of the ECX for the width of the confidence interval around the median value; and the certainty on the level of protection offered by the median ECX is reported.
Environmental Fate	Radiolabel characterization: purity, specific activity, location of label is reported.
Environmental Fate	If degradation kinetics are included: data tables / model description / statistical parameters for kinetic fit to be provided.
Environmental Fate, Residues	Monitoring data: description of matrix analysed, and analytical methods to be fully described.
Environmental Fate	Clear description of application rate and relevance to approved uses.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 22: Reliability criteria for toxicology – epidemiology and exposure studies

Reliability criteria – toxicology	
Epidemiology studies	Exposure studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines/practices.	Study in accordance to valid internationally accepted testing guidelines/practices.
Study completely described and conducted following scientifically acceptable standards.	Study performed according to GLP.
	Study completely described and conducted following scientifically acceptable standards.
Test substance	Test substance
Exposure to formulations with only glyphosate as a.i.	Exposure to formulations with only glyphosate as a.i.
Exposure to formulations with glyphosate combined with other a.i.	Exposure to formulations with glyphosate combined with other a.i.
Exposure to various formulations of pesticides.	Exposure to various formulations of pesticides.
Study	Study
Study design – epidemiological method followed.	Study design clearly described.
Description of population investigated.	Population investigated sufficiently described.
Description of exposure circumstances.	Exposure circumstances sufficiently described.
Description of results.	Sampling scheme sufficiently documented.
Have confounding factors been considered.	Analytical method described in detail.
Statistical analysis.	Validation of analytical method reported.
	Monitoring results reported.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 23: Reliability criteria for toxicology – *in vitro* and *in vivo* studies

Reliability criteria – toxicology and metabolism	
<i>In vitro</i> studies	<i>In vivo</i> studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines.	Study in accordance to valid internationally accepted testing guidelines.
Study performed according to GLP.	Study performed according to GLP.
Study completely described and conducted following scientifically acceptable standards.	Study completely described and conducted following scientifically acceptable standards.
Test substance	Test substance
Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions).	Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions).
Only glyphosate acid or one of its salts is the tested substance.	Only glyphosate acid or one of its salts is the tested substance.
AMPA or other glyphosate metabolite is the tested substance.	AMPA or other glyphosate metabolite is the tested substance.
Study	Study
Test system clearly and completely described.	Test species clearly and completely described.
Test conditions clearly and completely described.	Test conditions clearly and completely described.
Metabolic activation system clearly and completely described.	Route and mode of administration described.
Test concentrations in physiologically acceptable range (< 1 mM).	Dose levels reported.
Cytotoxicity tests reported.	Number of animals used per dose level reported.
Positive and negative controls.	Method of analysis described for analysis test media.
Complete reporting of effects observed.	Validation of the analytical method.
Statistical methods described.	Analytical verifications of test media.
Historical negative and positive control data reported.	Complete reporting of effects observed.
Dose-effect relationship reported.	Statistical methods described.
	Historical control data of the laboratory reported.
	Dose-effect relationship reported.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

3 Search results

The full outcome of the literature search and evaluation is provided below.

Table 24: Summary of the literature search – all technical sections

	Number	Justification
Total number of articles retrieved from the search.	2643	n.a.
Total number of articles after removal of duplicates within all databases.	1522	n.a.
Total number of articles after manual removal of duplicates. ^{a)}	597	n.a.
Number of articles excluded after rapid assessment (title / abstract).	523	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	74	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	28	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	46	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	10	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 25: Results of the article selection process for ecotoxicology

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	93	n.a.
Number of articles excluded after rapid assessment (title / abstract).	61	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	32	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	19	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	13	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	3	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 26: Results of the article selection process for environmental fate

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	79	n.a.
Number of articles excluded after rapid assessment (title / abstract).	74	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	5	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	1	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	4	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	3	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 27: Results of the article selection process for residues

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	18	n.a.
Number of articles excluded after rapid assessment (title / abstract).	10	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	8	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	3	See Table 38
Number of articles not excluded after detailed assessment ^{b)}	5	See Table 32-Table 37
Number of summaries presented in the dossier ^{c)}	0	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 28: Results of the article selection process for toxicology

	Number	Justification
Total number of articles after manual removal of duplicates ^{a)}	76	n.a.
Number of articles excluded after rapid assessment (title / abstract).	47	See the Literature Review Excel File.
Total number of full-text documents assessed in detail	29	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	5	See Table 38
Number of articles not excluded after detailed assessment ^{b)}	24	See Table 32-Table 37
Number of summaries presented in the dossier ^{c)}	4	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 29: Results of the article selection process for analytical methods

	Number	Justification
Total number of articles after manual removal of duplicates ^{a)}	29	n.a.
Number of articles excluded after rapid assessment (title / abstract).	29	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 30: Results of the article selection process for efficacy / agronomy

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	248	n.a.
Number of articles excluded after rapid assessment (title / abstract).	248	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 31: Results of the article selection process for “other non-relevant categories”

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	54	n.a.
Number of articles excluded after rapid assessment (title / abstract).	54	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (Jan 2021 – 14 May 2021) and entries found already in the previous searches (Jan 2010 – Dec 2020). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 32: Relevant (category A) articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
1	CA 5.6	Gorga A. et al.	2021	Low Doses of Glyphosate/Roundup Alter Blood-Testis Barrier Integrity in Juvenile Rats.	Frontiers in endocrinology, (2021), Vol. 12, Article No. 615678	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
2	CA 5.6	Refaie A. A. et al.	2020	Hematological, biochemical, antioxidant and histopathological alterations in kidneys of wistar rat pups exposed to glyphosate herbicide during lactation period.	Current Topics in Pharmacology, (2020), Vol. 24, pp. 69-76	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
3	CA 5.6	Zhao L. et al.	2021	Glyphosate exposure attenuates testosterone synthesis via NR1D1 inhibition of StAR expression in mouse Leydig cells.	The Science of the total environment, (2021), Vol. 785, Article No. 147323	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
4	CA 5.9	Ferreira C. et al.	2021	Urine biomonitoring of glyphosate in children: Exposure and risk assessment.	Environmental research, (2021), Vol. 198, Article No. 111294	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
5	CA 7.3.1	Holtomo O. et al.	2021	Insight of UV-vis spectra and atmospheric implication for the reaction of OH radical towards glyphosate herbicide and its hydrates	RSC Advances (2021), Vol. 11, No. 27, pp. 16404-16418	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
6	CA 7.5	Geissen V. et al.	2021	Cocktails of pesticide residues in conventional and organic farming systems in Europe - Legacy of the past and turning point for the future.	Environmental pollution, (2021), Vol. 278, Article No. 116827	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
7	CA 7.5	Piel S. et al.	2021	Understanding the origins of herbicides metabolites in an agricultural watershed through their spatial and seasonal variations.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2021), Vol. 56, No. 4, pp. 313-332	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
8	CA 8.2.6.1, CA 8.2.7	Tajnaiova L. et al.	2020	Determination of the Ecotoxicity of Herbicides Roundup® Classic Pro and Garlon New in Aquatic and Terrestrial Environments	Plants (2020), Vol. 9, No. 9	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
9	CP 10.2.1	Gustinasari K. et al.	2021	Acute toxicity and morphology alterations of glyphosate-based herbicides to <i>Daphnia magna</i> and <i>Cyclops vicinus</i> .	Toxicological research, (2021), Vol. 37, No. 2, pp. 197-207	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
10	CP 10.3.1	Luo Q-H. et al.	2021	Effects of a commercially formulated glyphosate solutions at recommended concentrations on honeybee (<i>Apis mellifera</i> L.) behaviours.	Scientific reports, (2021), Vol. 11, No. 1, Article No. 2115	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.

Table 33: Relevant (category A) articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
4	Ferreira C. et al.	CA 5.9	2021	Urine biomonitoring of glyphosate in children: Exposure and risk assessment.	Environmental research, (2021), Vol. 198, Article No. 111294	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
6	Geissen V. et al.	CA 7.5	2021	Cocktails of pesticide residues in conventional and organic farming systems in Europe - Legacy of the past and turning point for the future.	Environmental pollution, (2021), Vol. 278, Article No. 116827	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
1	Gorga A. et al.	CA 5.6	2021	Low Doses of Glyphosate/Roundup Alter Blood-Testis Barrier Integrity in Juvenile Rats.	Frontiers in endocrinology, (2021), Vol. 12, Article No. 615678	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
9	Gustinasari K. et al.	CP 10.2.1	2021	Acute toxicity and morphology alterations of glyphosate-based herbicides to <i>Daphnia magna</i> and <i>Cyclops vicinus</i> .	Toxicological research, (2021), Vol. 37, No. 2, pp. 197-207	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
5	Holtomo O. et al.	CA 7.3.1	2021	Insight of UV-vis spectra and atmospheric implication for the reaction of OH radical towards glyphosate herbicide and its hydrates	RSC Advances (2021), Vol. 11, No. 27, pp. 16404-16418	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
10	Luo Q-H. et al.	CP 10.3.1	2021	Effects of a commercially formulated glyphosate solutions at recommended concentrations on honeybee (<i>Apis mellifera</i> L.) behaviours.	Scientific reports, (2021), Vol. 11, No. 1, Article No. 2115	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
7	Piel S. et al.	CA 7.5	2021	Understanding the origins of herbicides metabolites in an agricultural watershed through their spatial and seasonal variations.	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2021), Vol. 56, No. 4, pp. 313-332	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
2	Refaie A. A. et al.	CA 5.6	2020	Hematological, biochemical, antioxidant and histopathological alterations in kidneys of wistar rat pups exposed to glyphosate herbicide during lactation period.	Current Topics in Pharmacology, (2020), Vol. 24, pp. 69-76	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
8	Tajnaiova L. et al.	CA 8.2.6.1, CA 8.2.7	2020	Determination of the Ecotoxicity of Herbicides Roundup® Classic Pro and Garlon New in Aquatic and Terrestrial Environments	Plants (2020), Vol. 9, No. 9	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
3	Zhao L. et al.	CA 5.6	2021	Glyphosate exposure attenuates testosterone synthesis via NR1D1 inhibition of StAR expression in mouse Leydig cells.	The Science of the total environment, (2021), Vol. 785, Article No. 147323	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.

Table 34: Relevant but supplementary (category B) articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
11	CA 5.4	Celik D. A. et al.	2021	DNA damages of widely used pesticides; a comet assay report for chlorothalonil and glyphosate potassium salt.	Fresenius Environmental Bulletin, (2021), Vol. 30, No. 4 A, pp. 4170-4176	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article provides supplementary information on genotoxicity of glyphosate potassium salt demonstrating DNA damage in a comet assay. However, the DNA damage at the mid and high dose is significantly lower than observed at the low dose. No details on the donors, no cytotoxicity assay, no metabolic activation system, no mention of other parameters evaluated in the Comet Assay (ie: hedgehogs, tail length, or tail moment). Only %tail DNA was measured. Furthermore, no positive control and no HCD provided.
12	CA 5.4	Congur G.	2021	Monitoring of glyphosate-DNA interaction and synergistic genotoxic effect of glyphosate and 2,4-dichlorophenoxyacetic acid using an electrochemical biosensor.	Environmental pollution, (2021), Vol. 271, Article No. 116360	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides a new in vitro method using electrochemical biosensor to monitor DNA interaction of glyphosate and demonstrates a negative effect onto double stranded DNA. The article is relevant but supplementary for the glyphosate a.s. treatment, however not relevant for the glyphosate formulation tested as it contains ether amine ethoxylate (similar to POEA). No dose-effect relationship, no positive control, no HCD. No statistical method presented. The purity of purchased glyphosate was also not provided.
13	CA 5.4	Wozniak E. et al.	2021	Glyphosate and AMPA Induce Alterations in Expression of Genes Involved in Chromatin Architecture in Human Peripheral Blood Mononuclear Cells (In Vitro).	International journal of molecular sciences, (2021), Vol. 22, No. 6	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides new information on the effect of glyphosate and the metabolite AMPA on expression of genes involved in chromatin architecture in human peripheral blood mononuclear cells (PBMCs). The results provide useful information on epigenetic processes that may be relevant but are difficult to interpret without further guidance. Therefore, the results are not expected to alter the existing risk assessment No HCD, no positive control. No real dose-effect relationship reported. The lack of positive control does not allow assessing the laboratory proficiency.
14	CA 5.6	Mutwedu V. B. et al.	2021	Growth performance and reproductive function impairment of glyphosate-based herbicide in male guinea pig (Cavia porcellus).	Veterinary medicine and science, (2021): Ahead of Print	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article presents the effects of a glyphosate-based formulation on growth performance and reproductive function impairment in male guinea pigs, which is not the typical animal model of choice for this type of investigation. This study provides interesting information on reproductive functions but the guinea pig is not a model validated for assessing reproductive toxicity in the EU evaluations. Atypical animal model, so historical control data in this species at this lab is paramount to interpret results, and no positive controls to confirm method validity. Findings are confounded by overt general toxicity at high surfactant doses. No necropsy observations of likely gastrointestinal damage resulting from high oral surfactant exposures. No information on the feed, and no method of analysis.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
15	CA 5.6	Upadhyay J. et al.	2020	Teratogenic effect of chlorpyrifos and glyphosate on pregnant rats: biochemical and morphological evaluations.	Journal of Pharmaceutical Research International, (2020), Vol. 32, No. 23, Article No. JPRI.61413	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides information on teratogenic effects of glyphosate-based formulation Topper 77 (Crystal Crop Protection Pvt. Ltd India) which is nowhere close to the glyphosate representative EU formulation for AIR5. According to the webpage (https://www.crystalcropprotection.com/internationalsales/detail/Topper) it contains 71% of glyphosate and it is a SG-formulation. The representative glyphosate formulation for the AIR5 is a SL formulation and contains 360 g a.s./L. Due to formulation tested, the article is classified as relevant but supplementary. No information on purity, content and storage conditions of the test material. One dose level/no dose-effect relationship, no HCD reported.
16	CA 5.7	Luna S. et al.	2021	Glyphosate exposure induces synaptic impairment in hippocampal neurons and cognitive deficits in developing rats.	Archives of toxicology, (2021) : Ahead of Print	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . In vitro test: Extremely high and irrelevant supraphysiological doses. No metabolic activation system and cytotoxicity assay. No HCD, no positive control. In vivo test: No information on body weight and age of animals, no information on diet, no HCD. Route of administration was by s.c. injection in the neck. This route of administration is not relevant and does not represent the normal ADME processes with low absorption and rapid elimination.
17	CA 5.8	Fan X. et al.	2021	Identification of lncRNA expression profiles and analysis of ceRNA in the hippocampus of perinatal glyphosate-exposed mice.	International journal of developmental neuroscience : the official journal of the International Society for Developmental Neuroscience, (2021) : Ahead of Print	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article analyses the role of long noncoding RNAs in the mechanisms of glyphosate neurotoxicity in neuronal development through a perinatal glyphosate exposure (PGE) mouse model. The results provide supplementary information on lncRNA and potential relationship with neurotoxicity. There is no information on the test material (purity, source, content). Test conditions are not clearly and completely described. Only one dose level was reported / no dose-response relationship. No "received dose calculation" possible without information on water consumption. Furthermore, no HCD reported.
18	CA 5.8	Mesnager R. et al.	2021	Urinary excretion of herbicide co-formulants after oral exposure to roundup MON 52276 in rats.	Environmental research, (2021), Vol. 197, Article No. 111103	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Useful information about the urinary excretion of herbicide co-formulants after exposure to a glyphosate formulation in rats. It is only related to surfactant absorption/excretion which is then formulation specific. No toxicological effect. Housing and environmental conditions not described. No information on diet. No confirmation of received dose.
19	CA 5.8	Mesnager R. et al.	2021	Use of Shotgun Metagenomics and Metabolomics to Evaluate the Impact of Glyphosate or Roundup MON 52276 on the Gut Microbiota and Serum	Environmental health perspectives, (2021), Vol. 129, No. 1, Article No. 17005	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Potential effects to gut microbiota and serum metabolome are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. However, this paper presents novel data with the use of multi-omics approaches evaluating the impact of glyphosate on the gut

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
				Metabolome of Sprague-Dawley Rats.		microbiota and serum metabolome of rats. This study may not be useful directly for risk assessment, but could help from a mode of action point of view. Diet, housing and environmental conditions not described, no HCD.
20	CA 5.8	Nozdrenko D. et al.	2021	Analysis of biomechanical parameters of muscle soleus contraction and blood biochemical parameters in rat with chronic glyphosate intoxication and therapeutic use of C60 fullerene.	International Journal of Molecular Sciences, (2021), Vol. 22, No. 9, Article No. 4977	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article presents an analysis of biomechanical and blood biochemical parameters in rat with chronic glyphosate intoxication and the use of C60 fullerene as effective nanotherapeutics in the treatment of glyphosate-based herbicide poisoning. This study provides useful information but does not alter the existing risk assessment. No information on the test material. Diet, housing and environmental conditions not described. Only one dose/no dose-effect relationship. No HCD.
21	CA 5.8	Pandher U. et al.	2021	Pulmonary inflammatory response from co-exposure to LPS and glyphosate.	Environmental toxicology and pharmacology, (2021) Vol. 86, Article No. 103651	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article presents an evaluation of the pulmonary inflammatory response from co-exposure to LPS and glyphosate. This study provides useful information concerning to mode of action but does not alter the existing risk assessment. Purity of glyphosate not stated. Diet, housing and environmental conditions not described. One dose/no dose-effect relationship, no HCD.
22	CA 5.8.2	Hashim A. R. et al.	2021	Ameliorative effect of N-acetylcysteine against glyphosate-induced hepatotoxicity in adult male albino rats: histopathological, biochemical, and molecular studies.	Environmental science and pollution research international, (2021) : Ahead of Print	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on the ability of N-acetylcysteine to ameliorate toxic effects of glyphosate on the liver if administered prior to glyphosate exposure. Only one dose/no dose-response relationship, no HCD reported.
23	CA 5.9	Kabat G. C. et al.	2021	On recent meta-analyses of exposure to glyphosate and risk of non-Hodgkin's lymphoma in humans.	Cancer causes & control, (2021), Vol. 32, No. 4, pp. 409-414	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The purpose of this meta-analysis seems to be to critique the Zhang et al. meta-analysis (Exposure to glyphosatebased herbicides and risk for non-Hodgkin lymphoma: a metaanalysis and supporting evidence. Mutat Res (2019) 781:186–206) and to provide a commentary on meta-analyses that combine results from observational studies of pesticides with different designs and different levels of analytic sophistication. The publication does not provide any primary data or improvement of the underlying studies' limitations and therefore is not informative with respect to possible glyphosate/NHL risk per se. The authors' points about the selective nature of the Zhang et al. (2019) meta-analysis seem valid as do the points about the unaddressed systematic errors in the case-control studies included in previous glyphosate meta-analyses. Not reliable about glyphosate risk per se due to the limitations of the studies included in the meta-analysis. Provides valid criticisms about the Zhang et al. (2019) meta-analysis and generally about meta-analyses of pesticide epidemiology studies.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
24	CA 5.9	Kimura T. et al.	2021	Lessons for the clinical nephrologist: acute kidney injury by a glyphosate-surfactant herbicide.	Journal of nephrology, (2021) : Ahead of Print	The article / case report has been classified as relevant by full text - Category B for the following reason: This is a case report about an elderly patient who ingested a large volume of formulated glyphosate and presented with renal failure which improved with dialysis, which the patient was ultimately able to discontinue. They physicians obtained a kidney biopsy which showed vacuolization of the proximal tubules of the kidney which they suggest was related to the ingestion. Acute renal failure has been widely described in the literature following large ingestions of formulated glyphosate, however, most patients do not get kidney biopsies. This paper suggests that the associated renal failure is due to proximal tubular injury, which is not unexpected in these circumstances. Since this was a large intentional ingestion, it does not apply to agricultural use or practice.
25	CA 5.9	Kunapareddy T., Kalisetty S.	2021	Glyphosate poisoning - a case report.	Journal of postgraduate medicine, (2021), Vol. 67, No. 1, pp. 36-38	The article / case report has been classified as relevant by full text - Category B for the following reason: This is a case report of a patient who intentionally ingested a large amount of formulated glyphosate in a suicide attempt and developed multiorgan failure requiring intensive supportive care and ultimate recovery. Cases such as these have been widely described in the literature and outcomes such as these are not unexpected. The reassuring part of this case is that despite the suicide attempt, the patient survived.
26	CA 6.10	Billenkamp F. et al.	2021	No hints at glyphosate-induced ruminal dysbiosis in cows.	NPJ biofilms and microbiomes, (2021), Vol. 7, No. 1, Article No. 30	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: This is an experimental study to investigate potential detrimental effects of glyphosate on the cattle ruminal microbiome. Cows were fed with feedstuffs with strong differences in dietary fiber and concentrate feed proportion (CFP), either with or without glyphosate residues from pre-harvest treatment. The study is well conducted and analysed. The results show that glyphosate does not have adverse effects on the cattle ruminal microbiome, as it was previously suggested by in vitro studies. While the publication does not correspond to any specific EU data requirement it nevertheless includes interesting data indicating that the residues of glyphosate in cattle feed do not impact cattle ruminal microbiome. The study is reliable with regard to methodology, analysis and statistical evaluation. Further details to animal feedstuff (exposure) provided in: Schnabel, K. et al. Effects of glyphosate residues and different concentrate feed proportions on performance, energy metabolism and health characteristics in lactating dairy cows. Arch. Anim. Nutr. 71, 413 – 427 (2017).
27	CA 6.10	Heymann A. et al.	2021	Effects of glyphosate residues and different concentrate feed proportions in dairy cow rations on hepatic gene expression, liver histology and biochemical blood parameters.	PloS one, (2021), Vol. 16, No. 2, Article No. e0246679	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: This is an experimental study to investigate effects of glyphosate on the cattle hepatotoxic effects (61 lactating German Holstein cows). Cows were fed with feedstuffs with strong differences concentrate feed proportion (CFP), either with or without addition of glyphosate. The results show that glyphosate has no adverse effects on the liver of dairy cows (GLY-responsive gene expression/liver-related blood parameters). The study is reliable with regard to methodology, analysis and

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						statistical evaluation. Further details to animal feedstuff (exposure) provided in: Schnabel, K. et al. Effects of glyphosate residues and different concentrate feed proportions on performance, energy metabolism and health characteristics in lactating dairy cows. Arch. Anim. Nutr. 71, 413 – 427 (2017).
28	CA 6.10	Kolakowski B. M. et al.	2021	Analysis of Microbiological and Chemical Hazards in Edible Insects Available to Canadian Consumers.	Journal of food protection, (2021) : Ahead of Print	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: Monitoring data from Canada on pesticides in edible insects (crickets, silkworm, 47 samples). Glyphosate was detected in 36 samples (0.0064-0.15 mg/kg), AMPA was detected in 9 samples (0.007-0.45 mg/kg). Origin of residues unclear. At this timepoint this paper is not relevant for EU because no MRLs are set on insect derived food products. The study is reliable with regard to monitoring data.
29	CA 6.5	Tittlemier S. A. et al.	2020	Fate of glyphosate in wheat during milling and bread production. Focus Issue: Grain and grain-based food safety.	Cereal Chemistry, (2020), Vol. 98, No. 1, pp. 100-108	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Processing study of wheat from Canada; only glyphosate was detected, no residues of AMPA. On average, in the pearling process 50% of glyphosate resided in the outer 17% of the kernels, while in the milling process 81% of glyphosate in the wheat was associated with the bran, shorts, and feeds milling fractions. No changes in glyphosate concentration (corrected for moisture content) were observed during the preparation of dough, fermented dough, and bread. No endpoint is derived, this study is considered supportive for processing of wheat, however no clear processing factors can be derived. Restrictions include absence of validation data in different processed wheat matrices. For the analytical method it is referred to another publication (Tittlemier et al., 2017, Evaluation of a commercially available enzyme-linked immunosorbent assay and a liquid chromatography-tandem mass spectrometric method for the analysis of glyphosate in wheat, oats, barley, malt, and lentils. Cereal Chemistry, 94, 1028-1036).
30	CA 6.9	de Souza Ferreira A. P. et al.	2021	Exposure assessment of glyphosate residues in soy-based infant formulas from the Brazilian market.	Journal für Verbraucherschutz und Lebensmittelsicherheit: Journal of consumer protection and food safety, (2021), Vol. 16, No. 1, pp. 45-50	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: Glyphosate and AMPA residues were found in Brazilian infant formulas produced with soy extract and/or protein. The residue levels found in the analysed samples are not relevant to the representative EU uses supported in the AIR5 dossier. Based on the monitoring data, a risk assessment has been conducted for infants (0-5 months and 6-11 months age). The study might support the provided risk assessments to show absence of consumer risk due to GLY/AMPA residues. The study is reliable with regard to monitoring data.
31	CA 7.5	Kaszkowiak K. et al.	2021	The concentration of glyphosate in the tap water in Greater Poland Region.	European Journal of Biological Research, (2021), Vol. 11, No. 1, pp. 57-64	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The concentration of glyphosate was measured in 66 randomly collected drinking water samples from separate Water Treatment Plants in Poland. Own data was generated. The concentration of glyphosate in the tested samples did not exceed 0.33 µg/L. The sampling procedure and timing as well as sample volume and storage time prior to analysis are not reported. Furthermore, the analytical method was not described

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						in detail and not validated. The article does not provide numerical concentrations for glyphosate but only the maximum detected concentration. Individual results are only presented graphically and cannot be assigned to a sampling location.
32	CA 8.2.1	Liao Yi-yu et al.	2020	Study on Acute and Chronic Toxicity of Glyphosate to Zebrafish	Guangzhou Huagong, (2020) Vol. 48, No. 21, pp. 66-68	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The study reports on endpoints potentially relevant for the aquatic risk assessment (96-hours LC50). However, the study was inadequately reported and can therefore not be deemed reliable based on the following aspects: The test item was not identified (just the source), the exposure concentrations were not reported; only the number of levels (5). Exposure concentrations were not analytically verified. Results per treatment level were not reported, only the calculated LC50 values. Mortality data for the control group were not reported either. In addition, information on the life stage and source of the organisms as well as on important water parameters like pH and dissolved oxygen content is missing. It is impossible to assess whether there was a clear dose-response relationship or whether other factors could have influenced the survival and fitness of the test organisms. The reported results can therefore not be used in a context of a regulatory risk assessment.
33	CA 8.2.1, CP 10.2.1	Shiry N. et al.	2020	A bioassay on tissue cholinesterase activity of Rutilus kutum (Kamensky, 1901) exposed to some common pesticides in Iran.	Veterinary research forum : an international quarterly journal, (2020), Vol. 11, No. 4, pp. 325-331	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . While the study reports on regulatory relevant endpoints for the acute toxicity to fish, the reporting is lacking essential information to ascertain the reliability of the derived endpoints. The identity of the test item (whether the active substance or a formulated product) was not clearly reported, purity of the test item was not provided. The application of the test item is not specified, it is unclear whether a solvent carrier was used. Exposure concentrations were not analytically verified. Composition of the test medium was not reported, neither were the environmental conditions during the test. Furthermore, there is barely any information on the control group, no results are reported for the control and it is unclear if the control group consisted of the same number of individuals as the treatment groups. While LC50 and LOEC values are reported, there is no information on the data distribution, goodness of fit or standard error. Raw data are not reported, hence it is impossible to assess the reliability of the reported endpoints. Overall, the study has to be deemed not reliable due to missing essential information in the report.
34	CA 8.2.5.2	Bringer A. et al.	2021	Toxicity and risk assessment of six widely used pesticides on embryo-larval development of the Pacific oyster, Crassostrea gigas.	The Science of the total environment, (2021), Vol. 779, Article No. 146343	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The test design allows for the derivation of NOECs, but for the most sensitive endpoint (Abnormal D-larvae (%)), the NOEC was below the lowest tested concentration, therefore no regulatory relevant endpoint can be determined. However, the study provides supplementary information on the sub-lethal effects of glyphosate on oyster larvae (specifically Crassostrea gigas) and could be useful as part of a broader

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						discussion Exposure concentrations were not analytically verified (stock solutions only). For the most sensitive endpoint (larvae malformations), significant effects were determined at the lowest tested concentration, therefore no NOEC could be determined. Purity of the test item was not provided.
35	CA 8.2.7.	Yu H. et al.	2021	Effects of microplastics and glyphosate on growth rate, morphological plasticity, photosynthesis, and oxidative stress in the aquatic species <i>Salvinia cucullata</i> .	Environmental pollution, (2021), Vol. 279, Article No. 116900	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The study reports on effects of microplastics and glyphosate on growth rate, morphological plasticity, photosynthesis, and oxidative stress in the aquatic species <i>Salvinia cucullata</i> . Of all reported endpoints, only plant growth variables (relative growth rate (RGR), average specific leaf growth rate (ASLG), and yellow-leaf percentage (YLP)) are not on a molecular or cellular level and could be of potential relevance for an EU-level risk assessment for aquatic plants. It should be noted that currently no standardized test guideline for the testing of chemicals with <i>Salvinia cucullata</i> exists. Furthermore, no regulatory relevant endpoints were calculated (e.g. ECx) and the results were not presented in a way that would allow conducting such calculations retroactively. However, it can be inferred from the study that the NOEC for relative growth rate would be 25 mg glyphosate/L and this could therefore serve as supporting information in a regulatory context. While the study reports on endpoints with potential relevance to the regulatory risk assessment of aquatic plants, specifically growth rate, the study can not be deemed reliable due to issues with the test design as well as reporting of the data. The most significant aspects are listed in the following: The test plants were collected from a not specified natural habitat and previous contact with contaminants that could affect the outcome of the test can not be ruled out. The application of the test item is not described and it is unclear whether a solvent carrier was used. If so, a solvent control would have to be included to dismiss possible toxic effects of the carrier. Exposure concentrations were not analytically verified. The test duration was 7 days without renewal of the test substance, the actual exposure concentrations could vary significantly from the nominal concentrations. Composition of the test medium was not reported. Furthermore, the results on growth rate are only reported in the form of a bar graph. Exact values can not be derived from the graph and statistical power can not be assessed. As no raw data are reported, statistical calculations can not be conducted retroactively. It has to be concluded that the study is not reliable for regulatory risk assessment purposes.
36	CA 8.6.2	Jiang L. et al.	2021	Earthworm casts restrained the accumulation and phytotoxicity of soil glyphosate to cowpea (<i>Vigna unguiculata</i> (L.) Walp.) plants.	Chemosphere, (2021), Vol. 279, Article No. 130571	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study primarily assesses the effects of earthworm casts on the accumulation and phytotoxicity of soil bound glyphosate to cowpea plants (<i>Vigna unguiculata</i>). However, the study also reports on the effects of glyphosate alone applied to soil at 12.15 m/kg on root and shoot length of <i>Vigna unguiculata</i> (in a sort of a seedling growth test). Although the test is not conducted according to any guidance, its results can be used as part of a broader discussion on the effects of glyphosate on non-target

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						terrestrial plants. While the study reports on parameters with potential relevance to the regulatory risk assessment of terrestrial plants, specifically shoot and root weight and shoot and root length of <i>Vigna unguiculata</i> , the study can not be deemed fully reliable due to the following issues. The soil sample was collected from a not specified sampling spot at Danzhou National Agricultural Science and Technology Park. Previous contact with contaminants that could affect the outcome of the test can not be ruled out. In addition, not all relevant soil parameters are reported on, information on cation exchange capacity, bulk density, water retention and microbial biomass is missing from the report. The application of the test item is not described and it is unclear whether a solvent carrier was used. Furthermore, exposure concentrations were not analytically verified. While analytical methods were reported in the material and methods section of the report, no analytical results pertaining to the plant growth experiment are reported. The test duration was 5 weeks, the actual exposure concentrations could vary significantly from the nominal concentrations. The results for the plant growth parameters (weight and length) are only reported in the form of a bar graph, which does not allow for derivation of exact values. Statistical differences between the treatment groups are marked in the graphic, however the underlying statistical methods are not reported. As no raw data are reported, statistical calculations can not be conducted retroactively.
37	CP 10.2.1	Akinbadewa A. O. et al.	2020	Sublethal effect of glyphosate [N-(phosphonomethyl)glycine] on growth performance and biochemical activities in some organs of <i>Clarias gariepinus</i> (Burchell, 1822) fingerlings.	Agraarteadus, (2020), Vol. 31, No. 2, pp. 122-130	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: No regulatory relevant endpoints are provided, but the findings of the work could serve to support acute effects of glyphosate on fish (specifically <i>Clarias gariepinus</i>) as part of a broader discussion. Chronic effects were calculated at 70 days, which is not an agreed time frame for a test with fish juveniles, and therefore they are not useful for the RA (in fact, at 28 days no mortality at any tested rate was detected). No guideline was followed. Concentrations of the test item in the exposure medium were not analytically verified and the test was conducted under static (96-hour acute test) or semi-static (70 days chronic test) conditions. The accuracy of the exposure concentrations is therefore unclear. Furthermore, endpoints relevant for the risk assessment, such as ECx values, were not calculated. For the long-term exposure test only 2 treatment levels were tested at an aleatory time frame (70 days), therefore ECx values can not be calculated and conclusions should be considered with caution. The test item was not sufficiently described.
38	CP 10.2.2	Sanudi F. et al.	2021	Effects of Glyphosate Herbicide on Physiological Parameters of Koi Carp, <i>Cyprinus Carpio</i> (Linnaeus, 1758) Fingerlings.	Indian Journal of Animal Research, (2021) Vol. 55, No. 3, pp. 266-270	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The study reports on chronic effects of glyphosate exposure to Koi carp (<i>Cyprinus Carpio</i>), incl. oxygen consumption rate, ammonia-nitrogen excretion rate, oxygen:nitrogen ratio and food consumption, over a duration of 28 days. The aforementioned parameters are not currently included in the context of an EU-level risk assessment. No ECx or

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						NOEC values were reported (only a LOEC of 3.3. mg/L can be established). Therefore, the study can only be used as supplementary information. While the study reports on potentially relevant endpoints for the chronic toxicity to fish, the studies presents with a number of weaknesses due to which the study has to be deemed “not-reliable”. The most significant issues are listed in the following: The application of the test item is not specified, it is unclear whether a solvent carrier was used. Exposure concentrations were not analytically verified and since the test design was semi-static (medium exchange every 24h), the actual exposure concentrations could vary significantly from the nominal concentrations. Composition of the test medium was not reported, neither were the environmental conditions during the test. Furthermore, the exact number of organisms per treatment level and replicates per treatment level are not reported. Statistical methods were applied but not described, and since raw data are not reported it is impossible to assess the statistical power retroactively. Lastly, while there were effects on all assessed parameters compared to the control group, not all parameters responded in a clear dose dependent fashion.
39	CP 10.6	Strandberg B. et al.	2021	Effects of glyphosate spray-drift on plant flowering.	Environmental pollution, (2021), Vol. 280, Article No. 116953	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study reports on spray-drift exposure of non-target plants to the glyphosate formulation Roundup Bio; 360 g a.i./L using tractor-mounted spray-drift reducing nozzles and effects on plant cover and flowering. While spray drift exposure is of relevance for the non-target plants (off-field) risk assessment, the effects assessed in this study (flowering and plant cover) are not currently taken into account in the context of an EU-level risk assessment. However, the study could be used in the context of a broader discussion regarding mitigation measures for the reduction of spray-drift exposure to non-target plants. The study reports on spray-drift exposure of non-target plants to the glyphosate formulation Roundup Bio; 360 g a.i./L using tractor-mounted spray-drift reducing nozzles and effects on plant cover and flowering. The study was deemed reliable with restrictions based on the following aspects: The tank solution contained a dye marker, sodium fluorescein, along with the glyphosate formulation. While the authors state that the substance has previously been used in tracer experiments, some including biological effects of pesticides, they also state that no publications on the effect of foliar application of sodium fluorescein on plants have been identified. Possible effects of the dye marker on the test plants can therefore not be excluded with certainty. Furthermore the results for estimated glyphosate spray drift deposition in relation to distance to edge of field and spray track are only reported in graphical form, which does not allow for derivation of exact values. The same goes for the effects on flowering in relation to glyphosate exposure. No raw data are reported.

Table 35: Relevant but supplementary (category B) articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
37	Akinbadewa A. O. et al.	CP 10.2.1	2020	Sublethal effect of glyphosate [N-(phosphonomethyl)glycine] on growth performance and biochemical activities in some organs of <i>Clarias gariepinus</i> (Burchell, 1822) fingerlings.	Agraarteadus, (2020), Vol. 31, No. 2, pp. 122-130	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: No regulatory relevant endpoints are provided, but the findings of the work could serve to support acute effects of glyphosate on fish (specifically <i>Clarias gariepinus</i>) as part of a broader discussion. Chronic effects were calculated at 70 days, which is not an agreed time frame for a test with fish juveniles, and therefore they are not useful for the RA (in fact, at 28 days no mortality at any tested rate was detected). No guideline was followed. Concentrations of the test item in the exposure medium were not analytically verified and the test was conducted under static (96-hour acute test) or semi-static (70 days chronic test) conditions. The accuracy of the exposure concentrations is therefore unclear. Furthermore, endpoints relevant for the risk assessment, such as ECx values, were not calculated. For the long-term exposure test only 2 treatment levels were tested at an aleatory time frame (70 days), therefore ECx values can not be calculated and conclusions should be considered with caution. The test item was not sufficiently described.
26	Billenkamp F. et al.	CA 6.10	2021	No hints at glyphosate-induced ruminal dysbiosis in cows.	NPJ biofilms and microbiomes, (2021), Vol. 7, No. 1, Article No. 30	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: This is an experimental study to investigate potential detrimental effects of glyphosate on the cattle ruminal microbiome. Cows were fed with feedstuffs with strong differences in dietary fiber and concentrate feed proportion (CFP), either with or without glyphosate residues from pre-harvest treatment. The study is well conducted and analysed. The results show that glyphosate does not have adverse effects on the cattle ruminal microbiome, as it was previously suggested by in vitro studies. While the publication does not correspond to any specific EU data requirement it nevertheless includes interesting data indicating that the residues of glyphosate in cattle feed do not impact cattle ruminal microbiome. The study is reliable with regard to methodology, analysis and statistical evaluation. Further details to animal feedstuff (exposure) provided in: Schnabel, K. et al. Effects of glyphosate residues and different concentrate feed proportions on performance, energy metabolism and health characteristics in lactating dairy cows. Arch. Anim. Nutr. 71, 413 – 427 (2017).
34	Bringer A. et al.	CA 8.2.5.2	2021	Toxicity and risk assessment of six widely used pesticides on embryo-larval development of the Pacific oyster, <i>Crassostrea gigas</i> .	The Science of the total environment, (2021), Vol. 779, Article No. 146343	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The test design allows for the derivation of NOECs, but for the most sensitive endpoint (Abnormal D-larvae (%)), the NOEC was below the lowest tested concentration, therefore no regulatory relevant endpoint can be determined. However, the study provides supplementary information on the sub-lethal effects of glyphosate on oyster larvae (specifically <i>Crassostrea gigas</i>) and could be useful as part of a broader discussion Exposure concentrations were not analytically verified (stock

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						solutions only). For the most sensitive endpoint (larvae malformations), significant effects were determined at the lowest tested concentration, therefore no NOEC could be determined. Purity of the test item was not provided.
11	Celik D. A. et al.	CA 5.4	2021	DNA damages of widely used pesticides; a comet assay report for chlorothalonil and glyphosate potassium salt.	Fresenius Environmental Bulletin, (2021), Vol. 30, No. 4 A, pp. 4170-4176	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article provides supplementary information on genotoxicity of glyphosate potassium salt demonstrating DNA damage in a comet assay. However, the DNA damage at the mid and high dose is significantly lower than observed at the low dose. No details on the donors, no cytotoxicity assay, no metabolic activation system, no mention of other parameters evaluated in the Comet Assay (ie: hedgehogs, tail length, or tail moment). Only %tail DNA was measured. Furthermore, no positive control and no HCD provided.
12	Congur G.	CA 5.4	2021	Monitoring of glyphosate-DNA interaction and synergistic genotoxic effect of glyphosate and 2,4-dichlorophenoxyacetic acid using an electrochemical biosensor.	Environmental pollution, (2021), Vol. 271, Article No. 116360	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides a new in vitro method using electrochemical biosensor to monitor DNA interaction of glyphosate and demonstrates a negative effect onto double stranded DNA. The article is relevant but supplementary for the glyphosate a.s. treatment, however not relevant for the glyphosate formulation tested as it contains ether amine ethoxylate (similar to POEA). No dose-effect relationship, no positive control, no HCD. No statistical method presented. The purity of purchased glyphosate was also not provided.
30	de Souza Ferreira A. P. et al.	CA 6.9	2021	Exposure assessment of glyphosate residues in soy-based infant formulas from the Brazilian market.	Journal für Verbraucherschutz und Lebensmittelsicherheit: Journal of consumer protection and food safety, (2021), Vol. 16, No. 1, pp. 45-50	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: Glyphosate and AMPA residues were found in Brazilian infant formulas produced with soy extract and/or protein. The residue levels found in the analysed samples are not relevant to the representative EU uses supported in the AIR5 dossier. Based on the monitoring data, a risk assessment has been conducted for infants (0-5 months and 6-11 months age). The study might support the provided risk assessments to show absence of consumer risk due to GLY/AMPA residues. The study is reliable with regard to monitoring data.
17	Fan X. et al.	CA 5.8	2021	Identification of lncRNA expression profiles and analysis of ceRNA in the hippocampus of perinatal glyphosate-exposed mice.	International journal of developmental neuroscience : the official journal of the International Society for Developmental Neuroscience, (2021) : Ahead of Print	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article analyses the role of long noncoding RNAs in the mechanisms of glyphosate neurotoxicity in neuronal development through a perinatal glyphosate exposure (PGE) mouse model. The results provide supplementary information on lncRNA and potential relationship with neurotoxicity. There is no information on the test material (purity, source, content). Test conditions are not clearly and completely described. Only one dose level was reported / no dose-response relationship. No "received dose calculation" possible without information on water consumption. Furthermore, no HCD reported.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
22	Hashim A. R. et al.	CA 5.8.2	2021	Ameliorative effect of N-acetylcysteine against glyphosate-induced hepatotoxicity in adult male albino rats: histopathological, biochemical, and molecular studies.	Environmental science and pollution research international, (2021) : Ahead of Print	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on the ability of N-acetylcysteine to ameliorate toxic effects of glyphosate on the liver if administered prior to glyphosate exposure. Only one dose/no dose-response relationship, no HCD reported.
27	Heymann A. et al.	CA 6.10	2021	Effects of glyphosate residues and different concentrate feed proportions in dairy cow rations on hepatic gene expression, liver histology and biochemical blood parameters.	PloS one, (2021), Vol. 16, No. 2, Article No. e0246679	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: This is an experimental study to investigate effects of glyphosate on the cattle hepatotoxic effects (61 lactating German Holstein cows). Cows were fed with feedstuffs with strong differences concentrate feed proportion (CFP), either with or without addition of glyphosate. The results show that glyphosate has no adverse effects on the liver of dairy cows (GLY-responsive gene expression/liver-related blood parameters). The study is reliable with regard to methodology, analysis and statistical evaluation. Further details to animal feedstuff (exposure) provided in: Schnabel, K. et al. Effects of glyphosate residues and different concentrate feed proportions on performance, energy metabolism and health characteristics in lactating dairy cows. Arch. Anim. Nutr. 71, 413 – 427 (2017).
36	Jiang L. et al.	CA 8.6.2	2021	Earthworm casts restrained the accumulation and phytotoxicity of soil glyphosate to cowpea (Vigna unguiculata (L.) Walp.) plants.	Chemosphere, (2021), Vol. 279, Article No. 130571	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study primarily assesses the effects of earthworm casts on the accumulation and phytotoxicity of soil bound glyphosate to cowpea plants (Vigna unguiculata). However, the study also reports on the effects of glyphosate alone applied to soil at 12.15 m/kg on on root and shoot length of Vigna unguiculata (in a sort of a seedling growth test). Although the test is not conducted according to any guidance, its results can be used as part of a broader discussion on the effects of glyphosate on non-target terrestrial plants. While the study reports on parameters with potential relevance to the regulatory risk assessment of terrestrial plants, specifically shoot and root weight and shoot and root length of Vigna unguiculata, the study can not be deemed fully reliable due to the following issues. The soil sample was collected from a not specified sampling spot at Danzhou National Agricultural Science and Technology Park. Previous contact with contaminants that could affect the outcome of the test can not be ruled out. In addition, not all relevant soil parameters are reported on, information on cation exchange capacity, bulk density, water retention and microbial biomass is missing from the report. The application of the test item is not described and it is unclear whether a solvent carrier was used. Furthermore, exposure concentrations were not analytically verified. While analytical methods were reported in the material and methods section of the report, no analytical results pertaining to the plant growth experiment are reported. The test duration was 5 weeks, the actual exposure concentrations could vary significantly from the nominal concentrations. The results for the plant growth parameters (weight and length)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						are only reported in the form of a bar graph, which does not allow for derivation of exact values. Statistical differences between the treatment groups are marked in the graphic, however the underlying statistical methods are not reported. As no raw data are reported, statistical calculations can not be conducted retroactively.
23	Kabat G. C. et al.	CA 5.9	2021	On recent meta-analyses of exposure to glyphosate and risk of non-Hodgkin's lymphoma in humans.	Cancer causes & control, (2021), Vol. 32, No. 4, pp. 409-414	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The purpose of this meta-analysis seems to be to critique the Zhang et al. meta-analysis (Exposure to glyphosatebased herbicides and risk for non-Hodgkin lymphoma: a metaanalysis and supporting evidence. Mutat Res (2019) 781:186–206) and to provide a commentary on meta-analyses that combine results from observational studies of pesticides with different designs and different levels of analytic sophistication. The publication does not provide any primary data or improvement of the underlying studies' limitations and therefore is not informative with respect to possible glyphosate/NHL risk per se. The authors' points about the selective nature of the Zhang et al. (2019) meta-analysis seem valid as do the points about the unaddressed systematic errors in the case-control studies included in previous glyphosate meta-analyses. Not reliable about glyphosate risk per se due to the limitations of the studies included in the meta-analysis. Provides valid criticisms about the Zhang et al. (2019) meta-analysis and generally about meta-analyses of pesticide epidemiology studies.
31	Kaszkowiak K. et al.	CA 7.5	2021	The concentration of glyphosate in the tap water in Greater Poland Region.	European Journal of Biological Research, (2021), Vol. 11, No. 1, pp. 57-64	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The concentration of glyphosate was measured in 66 randomly collected drinking water samples from separate Water Treatment Plants in Poland. Own data was generated. The concentration of glyphosate in the tested samples did not exceed 0.33 µg/L. The sampling procedure and timing as well as sample volume and storage time prior to analysis are not reported. Furthermore, the analytical method was not described in detail and not validated. The article does not provide numerical concentrations for glyphosate but only the maximum detected concentration. Individual results are only presented graphically and cannot be assigned to a sampling location.
24	Kimura T. et al.	CA 5.9	2021	Lessons for the clinical nephrologist: acute kidney injury by a glyphosate-surfactant herbicide.	Journal of nephrology, (2021) : Ahead of Print	The article / case report has been classified as relevant by full text - Category B for the following reason: This is a case report about an elderly patient who ingested a large volume of formulated glyphosate and presented with renal failure which improved with dialysis, which the patient was ultimately able to discontinue. They physicians obtained a kidney biopsy which showed vacuolization of the proximal tubules of the kidney which they suggest was related to the ingestion. Acute renal failure has been widely described in the literature following large ingestions of formulated glyphosate, however, most patients do not get kidney biopsies. This paper suggests that the associated renal failure is due to proximal tubular injury, which is not unexpected in these

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						circumstances. Since this was a large intentional ingestion, it does not apply to agricultural use or practice.
28	Kolakowski B. M. et al.	CA 6.10	2021	Analysis of Microbiological and Chemical Hazards in Edible Insects Available to Canadian Consumers.	Journal of food protection, (2021) : Ahead of Print	The article has been classified as relevant by full text - Category B and reliable without restrictions for the following reason: Monitoring data from Canada on pesticides in edible insects (crickets, silkworm, 47 samples). Glyphosate was detected in 36 samples (0.0064-0.15 mg/kg), AMPA was detected in 9 samples (0.007-0.45 mg/kg). Origin of residues unclear. At this timepoint this paper is not relevant for EU because no MRLs are set on insect derived food products. The study is reliable with regard to monitoring data.
25	Kunapareddy T., Kalisetty S.	CA 5.9	2021	Glyphosate poisoning - a case report.	Journal of postgraduate medicine, (2021), Vol. 67, No. 1, pp. 36-38	The article / case report has been classified as relevant by full text - Category B for the following reason: This is a case report of a patient who intentionally ingested a large amount of formulated glyphosate in a suicide attempt and developed multiorgan failure requiring intensive supportive care and ultimate recovery. Cases such as these have been widely described in the literature and outcomes such as these are not unexpected. The reassuring part of this case is that despite the suicide attempt, the patient survived.
32	Liao Yi-yu et al.	CA 8.2.1	2020	Study on Acute and Chronic Toxicity of Glyphosate to Zebrafish.	Guangzhou Huagong, (2020) Vol. 48, No. 21, pp. 66-68	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The study reports on endpoints potentially relevant for the aquatic risk assessment (96-hours LC50). However, the study was inadequately reported and can therefore not be deemed reliable based on the following aspects: The test item was not identified (just the source), the exposure concentrations were not reported; only the number of levels (5). Exposure concentrations were not analytically verified. Results per treatment level were not reported, only the calculated LC50 values. Mortality data for the control group were not reported either. In addition, information on the life stage and source of the organisms as well as on important water parameters like pH and dissolved oxygen content is missing. It is impossible to assess whether there was a clear dose-response relationship or whether other factors could have influenced the survival and fitness of the test organisms. The reported results can therefore not be used in a context of a regulatory risk assessment.
16	Luna S. et al.	CA 5.7	2021	Glyphosate exposure induces synaptic impairment in hippocampal neurons and cognitive deficits in developing rats.	Archives of toxicology, (2021) : Ahead of Print	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . In vitro test: Extremely high and irrelevant supraphysiological doses. No metabolic activation system and cytotoxicity assay. No HCD, no positive control. In vivo test: No information on body weight and age of animals, no information on diet, no HCD. Route of administration was by s.c. injection in the neck. This route of administration is not relevant and does not represent the normal ADME processes with low absorption and rapid elimination.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
18	Mesnager R. et al.	CA 5.8	2021	Urinary excretion of herbicide co-formulants after oral exposure to roundup MON 52276 in rats.	Environmental research, (2021), Vol. 197, Article No. 111103	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Useful information about the urinary excretion of herbicide co-formulants after exposure to a glyphosate formulation in rats. It is only related to surfactant absorption/excretion which is then formulation specific. No toxicological effect. Housing and environmental conditions not described. No information on diet. No confirmation of received dose.
19	Mesnager R. et al.	CA 5.8	2021	Use of Shotgun Metagenomics and Metabolomics to Evaluate the Impact of Glyphosate or Roundup MON 52276 on the Gut Microbiota and Serum Metabolome of Sprague-Dawley Rats.	Environmental health perspectives, (2021), Vol. 129, No. 1, Article No. 17005	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Potential effects to gut microbiota and serum metabolome are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. However, this paper presents novel data with the use of multi-omics approaches evaluating the impact of glyphosate on the gut microbiota and serum metabolome of rats. This study may not be useful directly for risk assessment, but could help from a mode of action point of view. Diet, housing and environmental conditions not described, no HCD.
14	Mutwedu V. B. et al.	CA 5.6	2021	Growth performance and reproductive function impairment of glyphosate-based herbicide in male guinea pig (<i>Cavia porcellus</i>).	Veterinary medicine and science, (2021): Ahead of Print	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article presents the effects of a glyphosate-based formulation on growth performance and reproductive function impairment in male guinea pigs, which is not the typical animal model of choice for this type of investigation. This study provides interesting information on reproductive functions but the guinea pig is not a model validated for assessing reproductive toxicity in the EU evaluations. Atypical animal model, so historical control data in this species at this lab is paramount to interpret results, and no positive controls to confirm method validity. Findings are confounded by overt general toxicity at high surfactant doses. No necropsy observations of likely gastrointestinal damage resulting from high oral surfactant exposures. No information on the feed, and no method of analysis.
20	Nozdrenko D. et al.	CA 5.8	2021	Analysis of biomechanical parameters of muscle soleus contraction and blood biochemical parameters in rat with chronic glyphosate intoxication and therapeutic use of C60 fullerene.	International Journal of Molecular Sciences, (2021), Vol. 22, No. 9, Article No. 4977	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article presents an analysis of biomechanical and blood biochemical parameters in rat with chronic glyphosate intoxication and the use of C60 fullerene as effective nanotherapeutics in the treatment of glyphosate-based herbicide poisoning. This study provides useful information but does not alter the existing risk assessment. No information on the test material. Diet, housing and environmental conditions not described. Only one dose/no dose-effect relationship. No HCD.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
21	Pandher U. et al.	CA 5.8	2021	Pulmonary inflammatory response from co-exposure to LPS and glyphosate.	Environmental toxicology and pharmacology, (2021) Vol. 86, Article No. 103651	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article presents an evaluation of the pulmonary inflammatory response from co-exposure to LPS and glyphosate. This study provides useful information concerning to mode of action but does not alter the existing risk assessment. Purity of glyphosate not stated. Diet, housing and environmental conditions not described. One dose/no dose-effect relationship, no HCD.
38	Sanudi F. et al.	CP 10.2.2	2021	Effects of Glyphosate Herbicide on Physiological Parameters of Koi Carp, Cyprinus Carpio (Linnaeus, 1758) Fingerlings.	Indian Journal of Animal Research, (2021) Vol. 55, No. 3, pp. 266-270	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The study reports on chronic effects of glyphosate exposure to Koi carp (Cyprinus Carpio), incl. oxygen consumption rate, ammonia-nitrogen excretion rate, oxygen:nitrogen ratio and food consumption, over a duration of 28 days. The aforementioned parameters are not currently included in the context of an EU-level risk assessment. No ECx or NOEC values were reported (only a LOEC of 3.3. mg/L can be established). Therefore, the study can only be used as supplementary information. While the study reports on potentially relevant endpoints for the chronic toxicity to fish, the studies presents with a number of weaknesses due to which the study has to be deemed "not-reliable". The most significant issues are listed in the following: The application of the test item is not specified, it is unclear whether a solvent carrier was used. Exposure concentrations were not analytically verified and since the test design was semi-static (medium exchange every 24h), the actual exposure concentrations could vary significantly from the nominal concentrations. Composition of the test medium was not reported, neither were the environmental conditions during the test. Furthermore, the exact number of organisms per treatment level and replicates per treatment level are not reported. Statistical methods were applied but not described, and since raw data are not reported it is impossible to assess the statistical power retroactively. Lastly, while there were effects on all assessed parameters compared to the control group, not all parameters responded in a clear dose dependent fashion.
33	Shiry N. et al.	CA 8.2.1, CP 10.2.1	2020	A bioassay on tissue cholinesterase activity of Rutilus kutum (Kamensky, 1901) exposed to some common pesticides in Iran.	Veterinary research forum : an international quarterly journal, (2020), Vol. 11, No. 4, pp. 325-331	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . While the study reports on regulatory relevant endpoints for the acute toxicity to fish, the reporting is lacking essential information to ascertain the reliability of the derived endpoints. The identity of the test item (whether the active substance or a formulated product) was not clearly reported, purity of the test item was not provided. The application of the test item is not specified, it is unclear whether a solvent carrier was used. Exposure concentrations were not analytically verified. Composition of the test medium was not reported, neither were the environmental conditions during the test. Furthermore, there is barely any information on the control group, no results are reported for the control and it is unclear if the control group consisted of the same number of individuals as the treatment groups. While LC50 and LOEC values are reported, there is no

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						information on the data distribution, goodness of fit or standard error. Raw data are not reported, hence it is impossible to assess the reliability of the reported endpoints. Overall, the study has to be deemed not reliable due to missing essential information in the report.
39	Strandberg B. et al.	CP 10.6	2021	Effects of glyphosate spray-drift on plant flowering.	Environmental pollution, (2021), Vol. 280, Article No. 116953	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study reports on spray-drift exposure of non-target plants to the glyphosate formulation Roundup Bio; 360 g a.i./L using tractor-mounted spray-drift reducing nozzles and effects on plant cover and flowering. While spray drift exposure is of relevance for the non-target plants (off-field) risk assessment, the effects assessed in this study (flowering and plant cover) are not currently taken into account in the context of an EU-level risk assessment. However, the study could be used in the context of a broader discussion regarding mitigation measures for the reduction of spray-drift exposure to non-target plants. The study reports on spray-drift exposure of non-target plants to the glyphosate formulation Roundup Bio; 360 g a.i./L using tractor-mounted spray-drift reducing nozzles and effects on plant cover and flowering. The study was deemed reliable with restrictions based on the following aspects: The tank solution contained a dye marker, sodium fluorescein, along with the glyphosate formulation. While the authors state that the substance has previously been used in tracer experiments, some including biological effects of pesticides, they also state that no publications on the effect of foliar application of sodium fluorescein on plants have been identified. Possible effects of the dye marker on the test plants can therefore not be excluded with certainty. Furthermore the results for estimated glyphosate spray drift deposition in relation to distance to edge of field and spray track are only reported in graphical form, which does not allow for derivation of exact values. The same goes for the effects on flowering in relation to glyphosate exposure. No raw data are reported.
29	Tittlemier S. A. et al.	CA 6.5	2020	Fate of glyphosate in wheat during milling and bread production. Focus Issue: Grain and grain-based food safety.	Cereal Chemistry, (2020), Vol. 98, No. 1, pp. 100-108	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Processing study of wheat from Canada; only glyphosate was detected, no residues of AMPA. On average, in the pearling process 50% of glyphosate resided in the outer 17% of the kernels, while in the milling process 81% of glyphosate in the wheat was associated with the bran, shorts, and feeds milling fractions. No changes in glyphosate concentration (corrected for moisture content) were observed during the preparation of dough, fermented dough, and bread. No endpoint is derived, this study is considered supportive for processing of wheat, however no clear processing factors can be derived. Restrictions include absence of validation data in different processed wheat matrices. For the analytical method it is referred to another publication (Tittlemier et al., 2017, Evaluation of a commercially available enzyme-linked immunosorbent assay and a liquid chromatography-tandem mass spectrometric method for the analysis of

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						glyphosate in wheat, oats, barley, malt, and lentils. Cereal Chemistry, 94, 1028-1036).
15	Upadhyay J. et al.	CA 5.6	2020	Teratogenic effect of chlorpyrifos and glyphosate on pregnant rats: biochemical and morphological evaluations.	Journal of Pharmaceutical Research International, (2020), Vol. 32, No. 23, Article No. JPRI.61413	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides information on teratogenic effects of glyphosate-based formulation Topper 77 (Crystal Crop Protection Pvt. Ltd India) which is nowhere close to the glyphosate representative EU formulation for AIR5. According to the webpage (https://www.crystalcropprotection.com/internationalsales/detail/Topper) it contains 71% of glyphosate and it is a SG-formulation. The representative glyphosate formulation for the AIR5 is a SL formulation and contains 360 g a.s./L. Due to formulation tested, the article is classified as relevant but supplementary. No information on purity, content and storage conditions of the test material. One dose level/no dose-effect relationship, no HCD reported.
13	Wozniak E. et al.	CA 5.4	2021	Glyphosate and AMPA Induce Alterations in Expression of Genes Involved in Chromatin Architecture in Human Peripheral Blood Mononuclear Cells (In Vitro).	International journal of molecular sciences, (2021), Vol. 22, No. 6	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides new information on the effect of glyphosate and the metabolite AMPA on expression of genes involved in chromatin architecture in human peripheral blood mononuclear cells (PBMCs). The results provide useful information on epigenetic processes that may be relevant but are difficult to interpret without further guidance. Therefore, the results are not expected to alter the existing risk assessment No HCD, no positive control. No real dose-effect relationship reported. The lack of positive control does not allow assessing the laboratory proficiency.
35	Yu H. et al.	CA 8.2.7.	2021	Effects of microplastics and glyphosate on growth rate, morphological plasticity, photosynthesis, and oxidative stress in the aquatic species <i>Salvinia cucullata</i> .	Environmental pollution, (2021), Vol. 279, Article No. 116900	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The study reports on effects of microplastics and glyphosate on growth rate, morphological plasticity, photosynthesis, and oxidative stress in the aquatic species <i>Salvinia cucullata</i> . Of all reported endpoints, only plant growth variables (relative growth rate (RGR), average specific leaf growth rate (ASLG), and yellow-leaf percentage (YLP)) are not on a molecular or cellular level and could be of potential relevance for an EU-level risk assessment for aquatic plants. It should be noted that currently no standardized test guideline for the testing of chemicals with <i>Salvinia cucullata</i> exists. Furthermore, no regulatory relevant endpoints were calculated (e.g. ECx) and the results were not presented in a way that would allow conducting such calculations retroactively. However, it can be inferred from the study that the NOEC for relative growth rate would be 25 mg glyphosate/L and this could therefore serve as supporting information in a regulatory context. While the study reports on endpoints with potential relevance to the regulatory risk assessment of aquatic plants, specifically growth rate, the study can not be deemed reliable due to issues with the test design as well as reporting of the data. The most significant aspects are listed in the following: The test plants were collected from a not specified natural habitat and previous contact with contaminants that could affect the outcome of the test can not be ruled out. The application of the test item is not described and it is unclear whether a solvent

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						carrier was used. If so, a solvent control would have to be included to dismiss possible toxic effects of the carrier. Exposure concentrations were not analytically verified. The test duration was 7 days without renewal of the test substance, the actual exposure concentrations could vary significantly from the nominal concentrations. Composition of the test medium was not reported. Furthermore, the results on growth rate are only reported in the form of a bar graph. Exact values can not be derived from the graph and statistical power can not be assessed. As no raw data are reported, statistical calculations can not be conducted retroactively. It has to be concluded that the study is not reliable for regulatory risk assessment purposes.

Table 36: Articles of unclear relevance (category C) after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
40	CA 5.8	Zhang L. et al.	2021	Involvement of mitochondrial fission in renal tubular pyroptosis in mice exposed to high and environmental levels of glyphosate combined with hard water.	Environmental pollution, (2021), Vol. 283, Article No. 117082	The relevance of this article is unclear (Category C) for the following reason: Although this publication provides information about involvement of mitochondrial fission in renal tubular pyroptosis in mice exposed to glyphosate combined with hard water, it is uncertain without further guidance, how these data can be related to the EU level regulatory risk assessment and how to interpret the data within the context of a renewal.
41	CA 5.8.2	Hu J. et al.	2021	Low-dose exposure of glyphosate-based herbicides disrupt the urine metabolome and its interaction with gut microbiota.	Scientific reports, (2021), Vol. 11, No. 1, Article No. 3265	The relevance of this article is unclear (Category C) for the following reason: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear.
42	CA 5.9	Franke A. A. et al.	2021	Pilot study on the urinary excretion of the glyphosate metabolite aminomethylphosphonic acid and breast cancer risk: The Multiethnic Cohort study.	Environmental pollution, (2021), Vol. 277, Article No. 116848	The relevance of this article is unclear (Category C) for the following reason: Exposure was presumably to AMPA, from uncertain sources. The population investigated were mostly post-menopausal women who were participants in the Hawaii biospecimen subcohort of the Multi-ethnic Cohort.
43	CA 5.9	Lesueur C. et al.	2021	Maternal urinary levels of glyphosate during pregnancy and anogenital distance in newborns in a US multicenter pregnancy cohort.	Environmental pollution, (2021), Vol. 280, Article No. 117002	The relevance of this article is unclear (Category C) for the following reason: First, it is unclear why the second trimester urine sample was selected for the analysis and whether it is representative of glyphosate and AMPA exposure during the etiologically relevant time period for affecting AGD. Second, it seems that chemicals and pesticides other than glyphosate were measured in urine (and blood) samples. Potential confounding from non-glyphosate exposures was not considered. Third, for female infants, there was a discrepancy between the results for the continuous and categorical analyses. In the former there were no significant results, while there were significant results in the categorical analyses. In general, dichotomizing at the median for highly positively skewed exposure variables does not create a clear exposure distinction between the groups being compared – both groups include primarily those with exposure values near the median. The discrepancy between the continuous and categorical analyses could be explained by those with the very highest exposure values having AGD similar to those with exposure values in the lower exposure group. It is obviously more informative to arrange comparison for groups that differ appreciably in the amount of exposure. Note also that there were no significant AGD findings for male infants. Lastly, the glyphosate and AMPA values are so low as to be of questionable biological plausibility given recent regulatory toxicology reviews for glyphosate and AMPA.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
44	CA 5.9	Meloni F. et al.	2021	Occupational exposure to glyphosate and risk of lymphoma: results of an Italian multicenter case-control study.	Environmental health : a global access science source, (2021), Vol. 20, No. 1, Article No. 49	The relevance of this article is unclear (Category C) for the following reason: This study is a very low quality case control study for evaluating glyphosate. The exposure to various formulations of pesticides was not described clearly, but likely exposure to multiple pesticides for those with relevant occupations (i.e. mixture toxicity). The authors only controlled for age, gender, study centre, and education. There was no control for exposures other than glyphosate.
45	CA 8.4	Anshu et al.	2020	Individual and combined toxic effects of herbicides on growth parameters and fecundity of Eisenia fetida	International Journal of Current Microbiology and Applied Sciences, (2020), Vol. 9, No. 12, pp. 1997-2005	The relevance of this article is unclear (Category C) for the following reason: No regulatory relevant endpoints are provided. In addition, results at 30, 60 and 90 days were provided, when the accepted time frame is 28 days (mortality and growth) and 56 days (reproduction) for Eisenia fetida. Earthworms were exposed to the test item all along the study period (90 days), while the agreed regulatory exposure period is of only 28 days (earthworms should have been removed after that). Therefore, the conclusions of the study are not comparable to any accepted regulatory endpoint. Thus its relevance remains unclear.
46	CP 10.4.2	Kozak V. M. et al.	2020	Influence of herbicides, insecticides and fungicides on food consumption and body weight of Russulus kessleri (Diplopoda, Julidae).	Biosystems Diversity, (2020), Vol. 28, No. 3, pp. 272-280	The relevance of this article is unclear (Category C) for the following reason: The study assesses the effects of a glyphosate formulation (Roundup, 450 g/L, IPA salt) on body weight, food consumption and production of feces of Russulus kessleri, a millipede (Diplopoda, Julidae), over a duration of 20 days. No endpoints relevant to the risk assessment were reported, as no reproduction effects were investigated. While soil-dwelling organisms are relevant for the EU level risk assessment, the species Russulus kessleri is not commonly used as a representative species for soil organisms. Furthermore, the described test system is not in accordance with the standardized test systems for soil organisms, as no soil was included in the test system, only dried litter. In addition, the test organisms were collected in the wild from a not specified source ("near an airport"), so previous contaminant exposure can not be ruled out.

Table 37: Articles of unclear relevance (category C) after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
45	Anshu et al.	CA 8.4	2020	Individual and combined toxic effects of herbicides on growth parameters and fecundity of <i>Eisenia fetida</i>	International Journal of Current Microbiology and Applied Sciences, (2020), Vol. 9, No. 12, pp. 1997-2005	The relevance of this article is unclear (Category C) for the following reason: No regulatory relevant endpoints are provided. In addition, results at 30, 60 and 90 days were provided, when the accepted time frame is 28 days (mortality and growth) and 56 days (reproduction) for <i>Eisenia fetida</i> . Earthworms were exposed to the test item all along the study period (90 days), while the agreed regulatory exposure period is of only 28 days (earthworms should have been removed after that). Therefore, the conclusions of the study are not comparable to any accepted regulatory endpoint. Thus its relevance remains unclear.
42	Franke A. A. et al.	CA 5.9	2021	Pilot study on the urinary excretion of the glyphosate metabolite aminomethylphosphonic acid and breast cancer risk: The Multiethnic Cohort study.	Environmental pollution, (2021), Vol. 277, Article No. 116848	The relevance of this article is unclear (Category C) for the following reason: Exposure was presumably to AMPA, from uncertain sources. The population investigated were mostly post-menopausal women who were participants in the Hawaii biospecimen subcohort of the Multi-ethnic Cohort.
41	Hu J. et al.	CA 5.8.2	2021	Low-dose exposure of glyphosate-based herbicides disrupt the urine metabolome and its interaction with gut microbiota.	Scientific reports, (2021), Vol. 11, No. 1, Article No. 3265	The relevance of this article is unclear (Category C) for the following reason: Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear.
46	Kozak V. M. et al.	CP 10.4.2	2020	Influence of herbicides, insecticides and fungicides on food consumption and body weight of <i>Rossius kessleri</i> (Diplopoda, Julidae).	Biosystems Diversity, (2020), Vol. 28, No. 3, pp. 272-280	The relevance of this article is unclear (Category C) for the following reason: The study assesses the effects of a glyphosate formulation (Roundup, 450 g/L, IPA salt) on body weight, food consumption and production of feces of <i>Russilus kessleri</i> , a millipede (Diplopoda, Julidae), over a duration of 20 days. No endpoints relevant to the risk assessment were reported, as no reproduction effects were investigated. While soil-dwelling organisms are relevant for the EU level risk assessment, the species <i>Russilus kessleri</i> is not commonly used as a representative species for soil organisms. Furthermore, the described test system is not in accordance with the standardized test systems for soil organisms, as no soil was included in the test system, only dried litter. In addition, the test organisms were collected in the wild from a not specified source ("near an airport"), so previous contaminant exposure can not be ruled out.
43	Lesueur C. et al.	CA 5.9	2021	Maternal urinary levels of glyphosate during pregnancy and anogenital distance in newborns in a US multicenter pregnancy cohort.	Environmental pollution, (2021), Vol. 280, Article No. 117002	The relevance of this article is unclear (Category C) for the following reason: First, it is unclear why the second trimester urine sample was selected for the analysis and whether it is representative of glyphosate and AMPA exposure during the etiologically relevant time period for affecting AGD. Second, it seems that chemicals and pesticides other than glyphosate were measured in urine (and blood) samples. Potential confounding from non-glyphosate exposures was not considered. Third, for female infants, there was a discrepancy between the results for the continuous and categorical analyses. In the former there were no

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
						significant results, while there were significant results in the categorical analyses. In general, dichotomizing at the median for highly positively skewed exposure variables does not create a clear exposure distinction between the groups being compared – both groups include primarily those with exposure values near the median. The discrepancy between the continuous and categorical analyses could be explained by those with the very highest exposure values having AGD similar to those with exposure values in the lower exposure group. It is obviously more informative to arrange comparison for groups that differ appreciably in the amount of exposure. Note also that there were no significant AGD findings for male infants. Lastly, the glyphosate and AMPA values are so low as to be of questionable biological plausibility given recent regulatory toxicology reviews for glyphosate and AMPA.
44	Meloni F. et al.	CA 5.9	2021	Occupational exposure to glyphosate and risk of lymphoma: results of an Italian multicenter case-control study.	Environmental health : a global access science source, (2021), Vol. 20, No. 1, Article No. 49	The relevance of this article is unclear (Category C) for the following reason: This study is a very low quality case control study for evaluating glyphosate. The exposure to various formulations of pesticides was not described clearly, but likely exposure to multiple pesticides for those with relevant occupations (i.e. mixture toxicity). The authors only controlled for age, gender, study centre, and education. There was no control for exposures other than glyphosate.
40	Zhang L. et al.	CA 5.8	2021	Involvement of mitochondrial fission in renal tubular pyroptosis in mice exposed to high and environmental levels of glyphosate combined with hard water.	Environmental pollution, (2021), Vol. 283, Article No. 117082	The relevance of this article is unclear (Category C) for the following reason: Although this publication provides information about involvement of mitochondrial fission in renal tubular pyroptosis in mice exposed to glyphosate combined with hard water, it is uncertain without further guidance, how these data can be related to the EU level regulatory risk assessment and how to interpret the data within the context of a renewal.

Table 38: Articles excluded after detailed assessment (i.e. not relevant): sorted by technical section (and by author)

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
47	Ecotoxicology	Canosa I. S. et al.	2021	In vitro Interference of a Glyphosate Commercial Formulation with the Stimulation of Ovarian Maturation by Progesterone, in the Estuarine Crab <i>Neohelice granulata</i> .	Bulletin of environmental contamination and toxicology, (2021), Vol. 106, No. 4, pp. 583-588	The article has been classified as not relevant by full text for the following reason: Roundup Ultramax is not the representative formulation for the glyphosate EU renewal. In addition it contains etheralkylamine ethoxylate (https://www.raiffeisen.com/agrar_sdb/111/ebb9b8dd2b70ad89b50c16a5dc67ec50?variante=), which does have a similar structure to POEA. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.
48	Ecotoxicology	Castelli L. et al.	2021	Impact of Chronic Exposure to Sublethal Doses of Glyphosate on Honey Bee Immunity, Gut Microbiota and Infection by Pathogens.	Microorganisms, (2021), Vol. 9, No. 4	The article has been classified as not relevant by full text for the following reason: This study evaluates the effects of non-lethal doses of glyphosate (0.1 µg/bee/d) on gut microbiota, immune response and lifespan of honeybees (<i>Apis mellifera</i> hybrids). These findings are largely based on cellular/molecular level and cannot be related to the risk assessment. The data on the bees lifespan cannot be expressed in the form of an endpoint relevant to the risk assessment as only one treatment concentration was tested. Overall, it can be concluded that the generated outcomes are not relatable to the EU level risk assessment.
49	Ecotoxicology	Cruz Souza C. E. et al.	2021	Physiological and morphoanatomical effects of glyphosate in <i>Eugenia uniflora</i> , a Brazilian plant species native to the Atlantic Forest biome.	Environmental science and pollution research international, (2021), Vol. 28, No. 17, pp. 21334-21346	The article has been classified as not relevant by full text for the following reason: Roundup Ultra is not the representative formulation for the glyphosate EU renewal. The surfactant system in the formulated product used in this study was not specified by the author. It is therefore not possible to confirm whether the product used contained POEA surfactant / surfactants of similar chemical structure. Glyphosate based formulations that contain POEA surfactants / surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) / surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the fact that it is unclear whether the formulated product contained POEA / surfactants of similar chemical structure, the article is not considered relevant for use in risk assessment. In addition, it seems that Roundup Ultra is a WG formulation (http://www.roundup.com.br/produtos-da-familia-roundup). The representative formulation for the glyphosate EU renewal is a SL formulation.
50	Ecotoxicology	Davico C. E. et al.	2021	Reproductive toxicity of Roundup WG (R) herbicide: impairments in	Environmental Science and Pollution Research International, (2021), Vol. 28, No. 12	The article has been classified as not relevant by full text for the following reason: Roundup WG is not the representative formulation for the glyphosate EU renewal. The representative formulation for the glyphosate EU renewal is MON 52276, which has a nominal glyphosate acid equivalent (a.e.) content of 360 g/L, formulated using glyphosate isopropyl-ammonium

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
				ovarian follicles of model organism <i>Danio rerio</i> .		salt and a quaternary-ammonium based surfactant. In addition, MON 52276 is a SC formulation whereas Roundup tested in this study is a WG formulation. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. As co-formulants were not identified in this paper, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.
51	Ecotoxicology	Díaz-Martín R. D. et al.	2021	Changes in microtubule stability in zebrafish (<i>Danio rerio</i>) embryos after glyphosate exposure.	Heliyon, (2021), Vol. 7, No. 1, Article No. E06027	The article has been classified as not relevant by full text for the following reason: This study evaluates the effects of glyphosate on microtubule stability in zebrafish embryos (<i>Danio rerio</i>). These findings are based on molecular/cellular level effects and cannot be related to the risk assessment. Overall, it can be concluded that the generated outcomes are not relatable to the EU level risk assessment.
52	Ecotoxicology	Galon L. et al.	2020	Damage to lemon tree caused by simulated drift of herbicides.	Revista de Ciencias Agroveterinarias, (2020), Vol. 19, No. 3, pp. 319-328	The article has been classified as not relevant by full text for the following reason: Effects on local (non-European) species under tropical/ subtropical environmental- resp. agricultural conditions. Effects observed in this greenhouse study conducted in Brazil are not easily transferrable to European conditions, not relevant for the risk assessment. In addition Roundup Original tested in this study is not the representative formulation for the glyphosate EU renewal (the representative formulation is MON 52276). Moreover, it contains POEA surfactants that is not permitted for use in formulated herbicidal products in the EU. Therefore, the findings of this paper are not relevant to the regulatory risk assessment for the glyphosate EU renewal.
53	Ecotoxicology	Glinski D. A. et al.	2021	Route of exposure influences pesticide body burden and the hepatic metabolome in post-metamorphic leopard frogs.	The Science of the total environment, (2021), Vol. 779, Article No. 146358	The article has been classified as not relevant by full text for the following reason: This study evaluates the effects of glyphosate exposure on the hepatic metabolome of post-metamorphic southern leopard frogs (<i>L. sphenoccephala</i>). These findings are based on molecular/cellular level effects and cannot be related to the risk assessment. The parameter body burden was not assessed for glyphosate. Overall, it can be concluded that the generated outcomes are not relatable to the EU level risk assessment.
54	Ecotoxicology	Korkmaz V. et al.	2021	The bioremediation of glyphosate in soil media by some newly isolated bacteria: The COD, TOC removal efficiency and mortality assessment for <i>Daphnia magna</i> .	Environmental Technology & Innovation, (2021), Vol. 22, Article No. 101535.	The article has been classified as not relevant by full text for the following reason: It is not possible to confirm the identity of the glyphosate based herbicide used in the study as only "Glyphosate, 480 gr of active material" is mentioned. The surfactant system in the formulated product used in this study was also not specified by the authors. The composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. Given this uncertainty over what was tested in this study, the paper is not considered relevant to the glyphosate EU renewal.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
55	Ecotoxicology	Lacava M. et al.	2021	pest-specific effects of glyphosate on functional response of a wolf spider.	Chemosphere, (2021), Vol. 262, Article No. 127785	The article has been classified as not relevant by full text for the following reason: It is not possible to confirm the identity of the test item used in the study as only 'Roundup' is mentioned. Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contained POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure. The surfactant system in the formulated product used in this study was also not specified by the author. Given this uncertainty over what was tested in this study, the paper is not considered relevant to the glyphosate EU renewal.
56	Ecotoxicology	Martinez-Garcia L. B. et al.	2021	Litter quality drives nitrogen release, and agricultural management (organic vs. conventional) drives carbon loss during litter decomposition in agro-ecosystems.	SOIL BIOLOGY & BIOCHEMISTRY, (2021), Vol. 153, Article No. 108115	The article has been classified as not relevant by full text for the following reason: It is not possible to confirm the identity of the test item used in the study as only 'Roundup' is mentioned. Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contained POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure. The surfactant system in the formulated product used in this study was also not specified by the author. Given this uncertainty over what was tested in this study, the paper is not considered relevant to the glyphosate EU renewal.
57	Ecotoxicology	Owagboriaye F. et al.	2021	Impacts of a glyphosate-based herbicide on the gut microbiome of three earthworm species (Alma millsoni, Eudrilus eugeniae and Libyodrilus violaceus): A pilot study.	Toxicology reports, (2021), Vol. 8, pp. 753-758	The article has been classified as not relevant by full text for the following reason: This study investigated the impact of a glyphosate formulation (Roundup Alphonée; 7.20 g/L) on the gut microbial communities of three earthworm species (Alma millsoni, Eudrilus eugeniae and Libyodrilus violaceus). The findings are based on molecular/cellular level effects and cannot be related to the risk assessment. In addition, the publication is not dealing with EU representative conditions as the tested species and soils used are native to Africa. Overall, it can be concluded that the generated outcomes are not relatable to the EU level risk assessment.
58	Ecotoxicology	Parlapiano I. et al.	2021	Effects of commercial formulations of glyphosate on marine crustaceans and implications for risk assessment under temperature changes.	Ecotoxicology and environmental safety, (2021), Vol. 213, Article No. 112068	The article has been classified as not relevant by full text for the following reason: None of the glyphosate formulations tested is the representative formulation for the glyphosate EU renewal. The representative formulation for the glyphosate EU renewal is MON 52276, which has a nominal glyphosate acid equivalent (a.e.) content of 360 g/L, formulated using glyphosate isopropyl-ammonium salt and a quaternary-ammonium based surfactant. Moreover, it is unclear whether the formulations tested contained POEA or not. In the discussion part of this paper, the author states that "Formulations vary between different brands and between different countries. These are cocktails of chemicals composed by glyphosate as active principle (36-48%), water, salts, and co-formulants such as polyoxyethylene tallow amine (POEA). Formulations with POEA are relatively toxic compared to other formulations (Mesnage et al., 2013; Mesnage and Antoniou, 2018)." This statement adds uncertainty concerning the relevance of the findings in the paper to the EU renewal of glyphosate. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
						For this reason and the uncertainties associated with the product tested (surfactant system not specified, may contain POEA -> POEA based surfactants are not to be used in agrochemical products in the EU), the article is not considered relevant for use in risk assessment.
59	Ecotoxicology	Portinho J. L. et al.	2021	Resting egg banks can facilitate recovery of zooplankton communities after short exposure to glyphosate.	Ecotoxicology, (2021), Vol. 30, No. 3, pp. 492-501	The article has been classified as not relevant by full text for the following reason: The study does report on short-term viability and recovery of zooplankton communities after exposure to glyphosate. However, the study design, test system and species tested (study conducted in Brazil with native, wild sampled organisms) are not relevant for the European regulatory purposes. The study design does not resemble any test currently used in a regulatory context and no regulatory relevant endpoints can be derived from this study.
60	Ecotoxicology	Rodriguez-Miguel A. et al.	2021	Exposure to sublethal concentrations of the glyphosate-based herbicide Faena® increases sensitivity in the progeny of the American cladoceran <i>Daphnia exilis</i> (Herrick, 1895).	Environmental science and pollution research international, (2021) : Ahead of Print	The article has been classified as not relevant by full text for the following reason: The glyphosate formulation tested is the representative formulation for the glyphosate EU renewal. The representative formulation for the glyphosate EU renewal is MON 52276, which has a nominal glyphosate acid equivalent (a.e.) content of 360 g/L, formulated using glyphosate isopropyl-ammonium salt and a quaternary-ammonium based surfactant. Moreover, it is unclear whether the formulation tested contained POEA or not. In the introduction of this paper, the author states that "Polyoxyethylene tallow amine (POEA) is a common surfactant included in glyphosate-based herbicides; it is assumed to be the main responsible for the toxicity of the commercial products in some aquatic organisms (Perkins et al. 2000; Thompson et al. 2004)." This statement adds uncertainty concerning the relevance of the findings in the paper to the EU renewal of glyphosate. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the uncertainties associated with the product tested (surfactant system not specified, may contain POEA -> POEA based surfactants are not to be used in agrochemical products in the EU), the article is not considered relevant for use in risk assessment.
61	Ecotoxicology	Sanchez Albanil J. A. et al.	2021	Glyphosate-based herbicides affect behavioural patterns of the livebearer <i>Jenynsia multidentata</i> .	Environmental science and pollution research international, (2021) : Ahead of Print	The article has been classified as not relevant by full text for the following reason: None of the glyphosate formulations tested is the representative formulation for the glyphosate EU renewal. The representative formulation for the glyphosate EU renewal is MON 52276, which has a nominal glyphosate acid equivalent (a.e.) content of 360 g/L, formulated using glyphosate isopropyl-ammonium salt and a quaternary-ammonium based surfactant. Moreover, Roundup Original (RO) and Roundup Transorb (RT) contain POEA (stated by the authors in the Materials and methods part of the paper "RO is a liquid formulation composed of glyphosate isopropylamine salt (IPA) (480 g/L), glyphosate acid equivalent (360 g/L GlyAE) and surfactant MON 0818, the Monsanto code for the POEA designation. RT is also a liquid made from glyphosate isopropylamine salt (IPA), but at 648 g/L, glyphosate acid equivalent, at 480 g/L GlyAE, and POEA.). The 3rd formulation tested was Roundup RWG which is a granular formulation. The representative formulation for the glyphosate EU renewal is a soluble concentrate (SL) The composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example,

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
						POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the fact that POEA based surfactants are not to be used in agrochemical products in the EU, the article is not considered relevant for use in risk assessment.
62	Ecotoxicology	Straw E. A. et al.	2021	Roundup causes high levels of mortality following contact exposure in bumble bees.	JOURNAL OF APPLIED ECOLOGY, (2021) : Ahead of Print	The article has been classified as not relevant by full text for the following reason: The products used in the study are not related to the representative formulation for the glyphosate EU renewal. 'Roundup No glyphosate' contains 'acetic acid' only. 'Weedol' is a mixture of glyphosate and pyraflufen-ethyl and 'Roundup Ready-To-Use' is a mixture of glyphosate and pelargonic acid (effects observed cannot be attributed to the substance of concern, i.e. mixture toxicity). The surfactant system used in 'Roundup ProActive' is alkyl polysaccharide + nitronyl based, whereas the surfactant used in the representative formulation (MON 52276) for the glyphosate EU renewal is quaternary-ammonium based. The composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal. Further points for clarification: • The authors acknowledge in the paper that tier methodology is not designed to replicate field realistic exposure (spraying conditions or label recommended application rates), it is instead designed to assess the lethality (hazard) the herbicide products pose to bumble bees. • The results from this study are not surprising considering that the bees were confined and directly sprayed with high volumes of the formulations and in some instances at application rates that greatly exceeded registered rates. • It cannot be concluded from this study that there will be unacceptable risk to bees from applications of lawn and garden and agricultural Roundup formulations when used according to the label. Users should always read the label and use pesticides safely. • For example, the label for Roundup Speed Ultra, which only contains acetic acid and water, states that the formulation is dangerous to bees and to protect bees and pollinating insects do not apply to plants when in flower, do not use where bees are actively foraging, and do not apply when flowering weeds are present. • Lawn and garden products are intended for spot applications, to the leaves of plants, and are not intended to be directly applied to insects, including bees. • Contact toxicity studies with bees, following the established OECD 214 test guideline used to assess acute contact toxicity to bees, have demonstrated no unacceptable risk for the lawn and garden and agricultural formulations to bees. • EFSA in their recent renewal assessment report for glyphosate, concluded that glyphosate and the representative formulation pose negligible acute and chronic risk to larval and adult bees (EFSA, 2015).
63	Ecotoxicology	Sylwestrzak Z. et al.	2021	Ecotoxicological Studies on the Effect of Roundup® (Glyphosate Formulation) on Marine Benthic	International journal of environmental research and public health, (2021), Vol. 18, No. 3	The article has been classified as not relevant by full text for the following reason: It is not possible to confirm the identity of the test item used in the study as only 'Roundup' is mentioned. Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contained POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure. POEA surfactant was discussed on

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
				Microalgae.		multiple occasions in the paper. These statements add uncertainty concerning the relevance of the findings in the paper to the EU renewal of glyphosate. Given this uncertainty over what was tested in this study, the paper is not considered relevant to the glyphosate EU renewal.
64	Ecotoxicology	Szabo R. et al.	2020	Toxicity test of individual and combined toxic effects of glyphosate herbicide and heavy metals on chicken embryos.	AGROFOR International Journal, (2020), Vol. 5, No. 3, pp. 64-71	The article has been classified as not relevant by full text for the following reason: Glialka Star is not the representative formulation for the glyphosate EU renewal. In addition it contains etheralkylamine ethoxylate (https://www.gazdabolt.hu/gyomirto-szer/1710-glialka-star-1-l.html ; under "Dokumentok"), which does have a similar structure to POEA. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.
65	Ecotoxicology	Zeng H. et al.	2021	Physiological and metagenomic strategies uncover the rhizosphere bacterial microbiome succession underlying three common environmental stresses in cassava.	Journal of hazardous materials, (2021), Vol. 411, Article No. 125143	The article has been classified as not relevant by full text for the following reason: The study reports on dynamics of rhizosphere bacterial microbiome of cassava under glyphosate exposure. The reported results are entirely on a molecular or cellular level and are hence not relatable to the EU level risk assessment. Cassava plant growth is also reported, but only graphically and it is not the scope of the publication. The study is therefore considered non-relevant.
66	Fate and behaviour in the environment	Hartmann A. et al.	2021	Risk of groundwater contamination widely underestimated because of fast flow into aquifers.	Proceedings of the National Academy of Sciences of the United States of America, (2021), Vol. 118, No. 20, Article No. e2024492118	The article has been classified as not relevant by full text for the following reason: A continental-scale model to quantify the risk of groundwater contamination with glyphosate and other compounds in the carbonate rock regions of Europe, North Africa and the Middle East was developed. The consistency of the model for glyphosate was evaluated with US data. The article does not report any measured data. The model results were qualitatively compared with referenced literature data for US, Switzerland and Ireland.
67	Residues in or on treated products, food and feed	Cebotari V., Buzu I.	2020	Conformity of rape, peas and maize flowers, concerning pesticide residues for organic beekeeping.	Scientific Papers, Series D. Animal Science, (2020), Vol. 63, No. 1, pp. 415-421	The article has been classified as not relevant by full text for the following reason: Monitoring of flowers of rape, pea and maize flowers for residues of glyphosate in Moldova (1 sampling site per crop, 5 replicate samples per crop). Glyphosate was detected in all samples. The study is not reliable: No description of the analytical procedure and no analytical validation data. In addition, the publication cannot be used to derive an endpoint. Furthermore, since the dataset is far too small to be considered representative of a country or region and since the agricultural practice at the sampling sites is not reported, the data are not usable or supportive for regulatory evaluations.
68	Residues in or on treated products, food and feed	Taghizadeh S. F. et al.	2021	Residues levels of pesticides in walnuts of Iran and associated health risks.	Human and Ecological Risk Assessment, (2021), Vol. 27, No. 1	The article has been classified as not relevant by full text for the following reason: Monitoring data from Iran on pesticides in walnuts (sampling from 5 sites). Glyphosate was detected in samples from 4 sites (no information provided on sample size, residue range in mg/kg). The study is not reliable and thus not relevant: It is unclear what was analysed: "Green husk and

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
						hard shells of walnuts were separated and then homogenized". Analytical method used was GC/MS. Extraction with acetonitrile. No information on how glyphosate is used in nut orchards. Sample size and residue levels not provided in tabular form. Unclear statistics which cannot be reproduced.
69	Residues in or on treated products, food and feed	Tiurina D. G. et al.	2021	Glyphosate in diets for poultry.	Ptitsevodstvo, (2021), No. 3, pp. 27-30	The article has been classified as not relevant by full text for the following reason: Very limited information on glyphosate in poultry feed. One in-vitro experiment with bacteria (Bacillus megaterium) incubation on glyphosate containing medium, only very limited description. The study is not reliable and thus not relevant: Poorly described study with some poultry feed monitoring data and an irrelevant in-vitro assay on bacterial degradation of glyphosate. The exact nature/composition of the analysed samples is not given. There is no information to assess the accuracy of the residue determination.
70	Toxicology and metabolism	Cardoso M. F. C. et al.	2021	Cardiovascular damage associated with subchronic exposure to the glyphosate herbicide in Wistar rats.	Toxicology and industrial health, (2021), Vol. 37, pp. 210-218	The article has been classified as not relevant by full text for the following reason: The publication is dealing with a glyphosate formulation Roundup Original. It is known that this formulation contains POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal. In addition, the publication does not provide any relevant information to be used in the risk assessment. There are no HCD to understand the relevance of the observed increase of fatty streaks. The conclusion of glyphosate atherogenic potential is not supported either by other correlated histopathology findings and/or appropriated biomarker of atherogenic risk.
71	Toxicology and metabolism	Panza S. B. et al.	2021	Perinatal exposure to low doses of glyphosate-based herbicide combined with a high-fat diet in adulthood causes changes in the jejunums of mice.	Life sciences, (2021), Vol. 275, Article No. 119350	The article has been classified as not relevant by full text for the following reason: The publication is dealing with a glyphosate formulation Roundup Original. It is known that this formulation contains POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal.
72	Toxicology and metabolism	Romano R. M. et al.	2021	Could Glyphosate and Glyphosate-Based Herbicides Be Associated With Increased Thyroid Diseases Worldwide?	Frontiers in endocrinology, (2021), Vol. 12, Article No. 627167	The article has been classified as not relevant by full text for the following reason: This article is a review of other publications. No study developed for glyphosate in this documents. This article is not relevant for risk assessment and does not bring any new information to the renewal dossier.
73	Toxicology and metabolism	Stewart B. W. et al.	2021	Enhanced communication of IARC Monograph findings to better achieve public health outcomes.	CARCINOGENESIS, (2021), Vol. 42, No. 2, pp. 159-168	The article has been classified as not relevant by full text for the following reason: The article is a summary of keywords to be used to improve communication to reach public health outcomes. No study developed for glyphosate in this documents. This article is not relevant for risk assessment and does not bring any new information to the renewal dossier.
74	Toxicology and metabolism	Wang R. et al.	2021	Renal tubular injury induced by glyphosate combined with hard water: the role of cytosolic phospholipase A2.	Annals of translational medicine, (2021), Vol. 9, No. 2, Article No. 130	The article has been classified as not relevant by full text for the following reason: This publication suggests renal tubular injury induced by glyphosate based formulation containing POEA surfactant combined with hard water. However, these data were obtained at excessively high doses of POEA surfactant, which are not relevant the EU level regulatory review. The lack of substantial body weight loss and potentially mortality at these exceedingly high POEA oral exposures for 90-days are not consistent with data published in the US EPA assessment

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
						for this POEA surfactant, with a NOAEL of 33 mg/kg bw/day and 39 mg/kg bw/day in males/females, respectively, and LOAEL of 99 mg/kg bw/day and 123 mg/kg bw/day in males/females, respectively (US EPA, 2009. Alkyl amine polyalkoxylates Human Health Risk Assessment, pages 58 and 59 of 94). Therefore, any findings are likely a consequence of overt toxicity to the gastrointestinal tract of treated animals. Furthermore, key study details on feed and water consumption are lacking, and as such the results are difficult to place in context relative to these key indicators of animal health.

Appendix 1: AGG ADVICE on how to present the literature search in the dossier**ASSESSMENT GROUP ON GLYPHOSATE (AGG)**

October 2019

**ADVICE TO GTF2:
HOW TO PRESENT THE LITERATURE SEARCH
IN THE DOSSIER TO BE SUBMITTED JUNE 2020**

The literature search should be carried out and presented as recommended in the EFSA Guidance EFSA Journal 2011;9(2):2092) including its recently published Appendix, available at the EFSA Journal.

**Rapid assessment of
titles/abstracts:**

Articles that are
considered as **not
relevant**:

Not necessary to submit
articles or study
summaries but
justification needed at a
general level, i.e. criteria
used to classify references
as being clearly non-
relevant.

**Detailed assessment of
full text of articles:**
Articles that are
considered as **not
relevant
or
considered not reliable**:

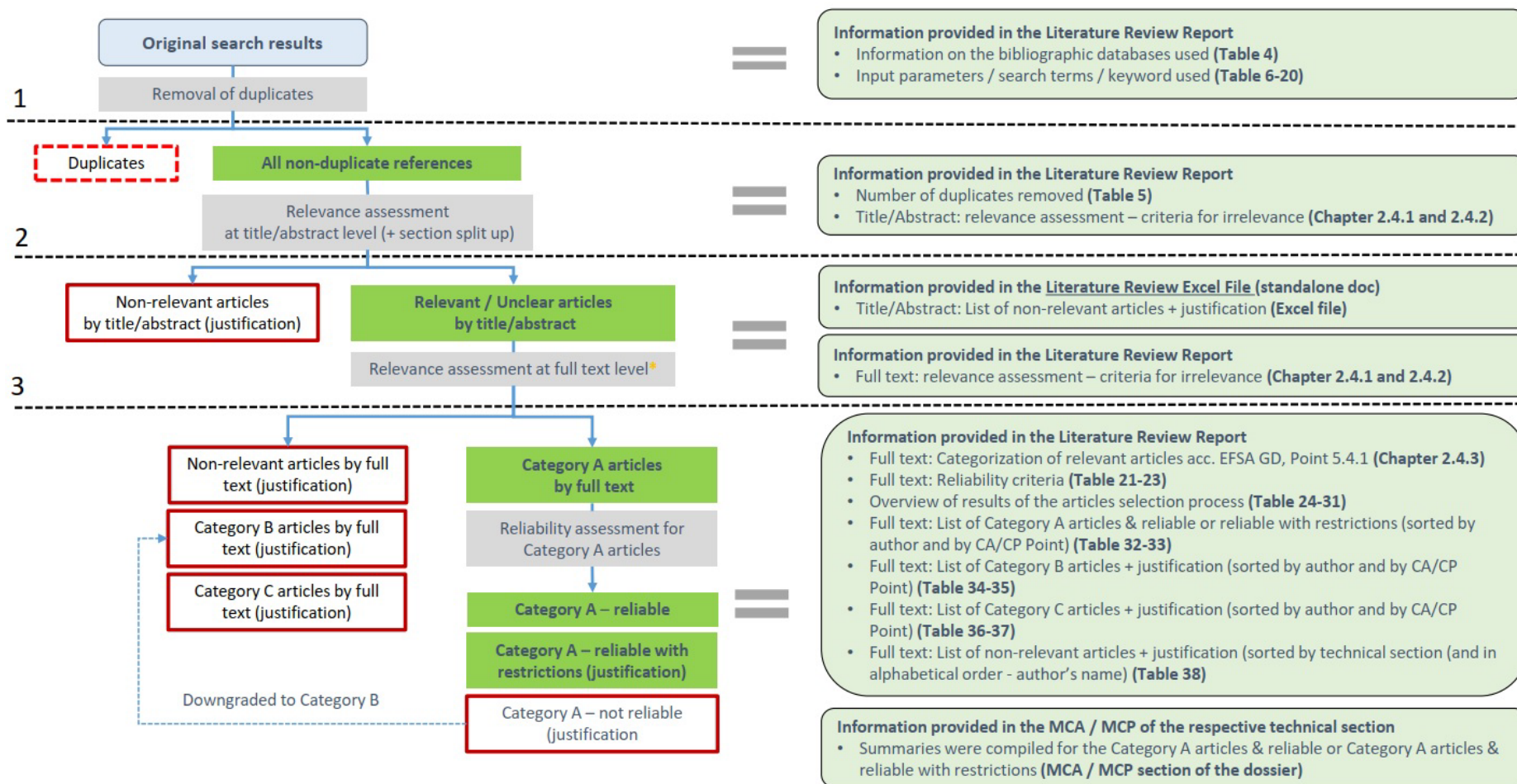
Necessary to submit
articles and statement
with the reason of
rejection (no study
summaries).

**Detailed assessment of
full text of articles:**
Articles considered as
relevant and reliable:

Necessary to submit
articles. A detailed study
summary should be
provided in the relevant
section of Doc
MCA/MCP.

For presentation of
detailed study summary,
reference is made to
EFSA Administrative
guidance on submission
of dossiers and
assessment reports for
the peer-review of
pesticide active
substances (27 March
2019, doi:
10.2903/sp.efsa.2016.EN
-1612).

Appendix 2: The process of articles selection



* All articles (and their translations) evaluated at full-text level (detailed assessment) are submitted to the AGG.

Appendix 3: ORIGINAL SEARCH QUERY - January 2021 – 14 May 2021

Preparing the search queries on STN:

FILE 'STNGUIDE' ENTERED AT 12:26:50 ON 13 MAY 2021
CHARGED TO COST=113898

L1 QUE SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
SAVE TEMP L1 GLY1/Q

L2 QUE SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
SAVE TEMP L2 GLY2/Q

L3 QUE SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL

L4 QUE SPE=ON ABB=ON PLU=ON HYDROXYMETHYLPHOSPHONATE OR
HYDROXYMETHYLPHOSPHONIC ACID

L5 QUE SPE=ON ABB=ON PLU=ON L3 OR L4
SAVE TEMP L5 GLY3/Q

L6 QUE SPE=ON ABB=ON PLU=ON 35404-71-8 OR METHYLAMINO METHYL
PHOSPHONIC ACID OR METHYLAMINOMETHYL PHOSPHONIC ACID OR
METHYLAMINOMETHYLPHOSPHONIC ACID OR N METHYL AMPA OR NSC
244826 OR PHOSPHONIC ACID METHYLAMINO METHYL OR PHOSPHONIC
ACID P METHYLAMINO METHYL

L7 QUE SPE=ON ABB=ON PLU=ON 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETH
YL PHOSPHONIC ACID OR 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETHYLPHOS
PHONIC ACID OR N GLYCERYL AMPA

L8 QUE SPE=ON ABB=ON PLU=ON 3 OXO 3 PHOSPHONOMETHYL AMINO
PROPANOIC ACID OR 3 OXO 3 PHOSPHONOMETHYL AMINOPROPANOIC ACID
OR N MALONYL AMPA

L9 QUE SPE=ON ABB=ON PLU=ON 993-13-5 OR DIHYDROGEN METHYLPHOSPH
ONATE OR METHANEPHOSPHONIC ACID OR METHYL PHOSPHONIC ACID OR
METHYLPHOSPHONIC ACID OR NSC 119358 OR PHOSPHONIC ACID METHYL
OR PHOSPHONIC ACID P METHYL

L10 QUE SPE=ON ABB=ON PLU=ON (L6 OR L7 OR L8 OR L9)
SAVE TEMP L10 GLY4/Q

L11 QUE SPE=ON ABB=ON PLU=ON 24569-83-3 OR 2 METHYL PHOSPHONOMET
HYL AMINO ACETIC ACID OR 2 METHYL PHOSPHONOMETHYL AMINOACETIC
ACID OR ACETIC ACID 2 N METHYL N PHOSPHONATOMETHYL AMINO OR
GLYCINE N METHYL N PHOSPHONOMETHYL OR GLYPHOSATE N METHYL OR
METHYL GLYPHOSATE

L12 QUE SPE=ON ABB=ON PLU=ON METHYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR METHYL PHOSPHONOMETHYL AMINOACETIC ACID OR N
METHYL N PHOSPHONOMETHYL GLYCINE OR N METHYLGLYPHOSATE OR N
PHOSPHONOMETHYL N METHYL GLYCINE OR N PHOSPHONOMETHYL N
METHYLGLYCINE

L13 QUE SPE=ON ABB=ON PLU=ON (L11 OR L12)
SAVE TEMP L13 GLY5/Q

L14 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
EYE? OR IRRIT? OR SENS? OR ALLERG?

L15 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?

L16 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
OR HORMON? OR GONAD? OR DISRUPT?

L17 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
OCCUPAT?

L18 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
RISK ASSESSMENT?

L19 QUE SPE=ON ABB=ON PLU=ON (L14 OR L15 OR L16 OR L17 OR L18)
SAVE TEMP L19 TOX/Q

L20 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING

L21 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?

L22 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE

L23 QUE SPE=ON ABB=ON PLU=ON (L20 OR L21 OR L22)
SAVE TEMP L23 RES/Q

L24 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR
SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER

L25 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT

L26 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR

- PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR
HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE
MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT
PROCESSES
- L27 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAIN
NS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR
OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER
OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR
PERSISTENCE OR LIGAND
- L28 QUE SPE=ON ABB=ON PLU=ON (L24 OR L25 OR L26 OR L27)
SAVE TEMP L28 FATE/Q
- L29 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR
?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR
BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR
EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR
PROTECTION GOALS OR ECO?
- L30 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY
OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC
OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS?
OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI?
OR ALG? OR CHIRON?
- L31 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR
LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR
INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR
APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR
- L32 QUE SPE=ON ABB=ON PLU=ON PLANT AND (SUBMERGE? OR EMERGE?)
- L33 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR
FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR
RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR
ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR
PARASITOID
- L34 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIU
S OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL?
OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR
MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR
NITROGEN
- L35 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR
SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR
ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB?
OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL
- L36 QUE SPE=ON ABB=ON PLU=ON (L29 OR L30 OR L31 OR L32 OR L33
OR L34 OR L35)
SAVE TEMP L36 ECO/Q

SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 12:37:35 ON 13 MAY 2021

Final search - Update May 2021:

FILE 'MEDLINE' ENTERED AT 11:33:55 ON 14 MAY 2021
CHARGED TO COST=113898
L1 4624 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L2 183 S L1 AND ED>20210104
L3 181 S L2 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L3 GLYMEDL/A

FILE 'AGRICOLA' ENTERED AT 11:37:05 ON 14 MAY 2021
CHARGED TO COST=113898
L4 7599 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L5 264 S L4 AND ED>20210104
L6 264 S L5 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L6 GLYAGRI/A

FILE 'BIOSIS' ENTERED AT 11:41:49 ON 14 MAY 2021
CHARGED TO COST=113898
L7 11785 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L8 277 S L7 AND ED>20210104
L9 258 S L8 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L9 GLYBIOS/A

FILE 'CABA' ENTERED AT 11:43:47 ON 14 MAY 2021
CHARGED TO COST=113898
L10 19552 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L11 467 S L10 AND ED>20210104
L12 467 S L11 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L12 GLYCABA/A

FILE 'FSTA' ENTERED AT 11:45:37 ON 14 MAY 2021
CHARGED TO COST=113898
L13 582 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L14 33 S L13 AND ED>20210104
L15 30 S L14 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L15 GLYFSTA/A

FILE 'PQSCITECH' ENTERED AT 11:47:54 ON 14 MAY 2021
CHARGED TO COST=113898
L16 5625 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L17 104 S L16 AND ED>20210104
L18 74 S L17 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L18 GLYPQSCI/A

FILE 'TOXCENTER' ENTERED AT 11:50:25 ON 14 MAY 2021
CHARGED TO COST=113898
L19 17721 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L20 573 S L19 AND ED>20210104
L21 383 S L20 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L21 GLYTOXC/A

FILE 'EMBASE' ENTERED AT 11:52:13 ON 14 MAY 2021
CHARGED TO COST=113898

L22 6164 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L23 127 S L22 AND ED>20210104
L24 127 S L23 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L24 GLYEMBA/A

FILE 'ESBIOBASE' ENTERED AT 11:54:26 ON 14 MAY 2021
CHARGED TO COST=113898

L25 5381 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L26 162 S L25 AND ED>20210104
L27 162 S L26 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L27 GLYESBIO/A

FILE 'HCAPLUS' ENTERED AT 11:56:17 ON 14 MAY 2021
CHARGED TO COST=113898

L28 30693 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L29 729 S L28 AND ED>20210104
L30 343 S L29 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L30 GLYHCAP/A

FILE 'SCISEARCH' ENTERED AT 11:58:14 ON 14 MAY 2021
CHARGED TO COST=113898

L31 12817 S GLY1/Q OR GLY2/Q OR GLY3/Q OR GLY4/Q OR GLY5/Q
L32 356 S L31 AND ED>20210104
L33 354 S L32 NOT (COMMENT? OR DISSERTATION OR EDITORIAL OR MEETING? OR
SAVE TEMP L33 GLYSCIS/A

FILE 'HOME' ENTERED AT 12:00:27 ON 14 MAY 2021
CHARGED TO COST=113898

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,
EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 12:03:58 ON 14 MAY 2021
CHARGED TO COST=113898

L34 1522 DUP REM L3 L6 L9 L12 L15 L18 L21 L24 L27 L30 L33 (1121 DUPLICAT
SAVE L34 GLY202105/A
L35 1237 S L34 AND TOX/Q
SAVE TEMP L35 GLYTOX/A
L36 1364 S L34 AND RES/Q
SAVE TEMP L36 GLYRES/A
L37 932 S L34 AND FATE/Q
SAVE TEMP L37 GLYFATE/A
L38 1436 S L34 AND ECO/Q
SAVE TEMP L38 GLYECO/A
L39 1517 S L35 OR L36 OR L37 OR L38
SAVE L39 GLY202105FIN/A

Literature Review Report

**Scientific peer-reviewed open literature covering the
publication period of 14 May 2021 to August 2021 for the
approval of pesticide active substance glyphosate and
metabolites**

**as under Article 8(5) of Regulation (EC) No 1107/2009
(Ref. EFSA Journal 2011; 9(2) 2092)**

Report number

113898-CA9-4

Author

Anonymous, 2022

Sponsor

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(on behalf of the Glyphosate Renewal Group, AIR5)

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Reporting Date

28 April 2022

Date of search(es):

08 September 2021

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1 Summary

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document (GD) - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”, and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG)⁵ on how to present the literature search in the dossier has been followed. Please refer to **Appendix 1** (page 71) for more details.

This Literature Review Report summarizes the search and evaluation of the glyphosate scientific peer-reviewed open literature covering the publication period of 14 May 2021 to August 2021 and is supplementary to the previous searches covering the publication period of January 2010 to 14 May 2021.⁶

The literature search was conducted accessing 11 bibliographic databases via the service provider STN.

In total, 543 articles were identified upon removal of duplicates within the current search (14 May 2021 to August 2021) and articles found already in the previous searches (January 2010 to 14 May 2021).

All 543 articles were subsequently assessed for their relevance at title/abstract level (“rapid assessment” according to the procedure and requirements stated in the EFSA 2092 GD).

A total of 470 of the 543 articles were identified as “non-relevant” in the rapid assessment (e.g. publications dealing with chemical synthesis, efficacy, analytical methods or publications which are not related to glyphosate or its metabolites) and excluded from further evaluation. Due to the large quantity of data, and as agreed with the AGG, the list of articles and the justification for their non-relevance is provided in a standalone Literature Review Excel File (Document ID: 113898_CA9-4_Literature Review Excel File).

For the remaining 73 articles, identified as potentially “relevant” or of “unclear relevance” in the rapid assessment, the full-text documents⁷ were reviewed in detail (“detailed assessment”).

¹ (aminomethyl)phosphonic acid (AMPA), N-acetyl-AMPA, N-acetyl-glyphosate, (hydroxymethyl)phosphonic acid (HMPA), N-methyl-AMPA, N-glyceryl-AMPA, N-malonyl-AMPA, methylphosphonic acid and N-methylglyphosate.

² European Food Safety Authority, 2011: *Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) No 1107/2009*. EFSA Journal 2011;9(2):2092. 49 pp, doi:10.2903/j.efsa.2011.2092.

³ Appendix to EFSA Journal 2011;9(2):2092. *Further guidance on performing and presenting the literature search*. Available online: <https://efsa.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.2903/j.efsa.2011.2092&file=efs22092-sup-0001-Appendix.pdf>

⁴ European Food Safety Authority, 2019. *Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*. EFSA supporting publication 2019:EN-1612. 49 pp., doi:10.2903/sp.efsa.2019.EN-1612.

⁵ On 10th May 2019, the European Commission appointed four Member States (France, Hungary, the Netherlands and Sweden) to act jointly as 'rapporteurs' for the AIR5 process assessment of glyphosate. This group of Member States is known as the Assessment Group on Glyphosate (AGG).

⁶ See Literature Review Reports 108689-CA9-1, 113898-CA9-1, 113898-CA9-2, and 113898-CA9-3 for more details.

⁷ All articles used within the glyphosate dossier have been purchased via Copyright Clearance Centre. In some cases, please note that the Copyright Clearance is not overtly visible, and in some instances is part of the article documents. Should the Copyright Clearance proof be required, this can be provided upon request.

A total of 23 articles of the remaining 73 articles were identified as “non-relevant” in the detailed assessment and were excluded from further evaluation. The list of the articles and the justification for their non-relevance is provided in **Table 38** of this Literature Review Report document.

The remaining 50 articles of the 73 articles were identified as “relevant” in the detailed assessment and were classified according to the EFSA 2092 GD (EFSA Journal 2011;9(2):2092, Point 5.4.1).

Category A Articles which provide data for establishing or refining risk assessment parameters. For all articles of Category A, a reliability assessment was performed as recommended in the EFSA 2092 GD. In addition, summaries were compiled for Category A articles classified as “reliable” or “reliable with restrictions”. The list of these Category A & reliable / reliable with restrictions articles can be found in **Table 32** and **Table 33** of this Literature Review Report document.

Category B Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment. A justification for such decision is provided as recommended in the EFSA 2092 GD. The list of these Category B articles and the justifications can be found in **Table 34** and **Table 35** of this Literature Review Report document.

Category C Articles for which relevance cannot be clearly determined. As recommended in the EFSA 2092 GD, an explanation is provided why the relevance could not be determined. The list of these Category C articles and the explanations can be found in **Table 36** and **Table 37** of this Literature Review Report document.

The full outcome of the literature evaluation is provided in **Table 1**.

Table 1: Summary of the literature review

Section	Number of articles found	Rapid assessment (title/abstract level)		Detailed assessment (full-text level)	
		non-relevant articles	potentially relevant / unclear relevance	non-relevant articles	relevant articles (Category A+B+C)
Efficacy / Agronomy ^{a)}	237	237	n.a.	n.a.	n.a.
Analytical methods ^{a)}	43	43	n.a.	n.a.	n.a.
Other non-relevant categories ^{b)}	38	38	n.a.	n.a.	n.a.
Ecotoxicology	82	50	32	15	17
E-fate	61	55	6	3	3
Residues	13	4	9	0	9
Toxicology	69	43	26	5	21
Total	543	470	73	23	50

^{a)} Efficacy / Agronomy (e.g. reporting desired effects on organisms to be controlled) and development of analytical methods (artificial measurements) do not provide information useful/required for the environmental or human safety risk assessment.

^{b)} The category "other non-relevant categories" covers a wide range of scientific publications which are not related to glyphosate or its metabolites or are not related to exposure of humans or the environment to glyphosate or its metabolites and thus not relevant for the risk assessments.

The full outcome of the relevant articles after detailed (full-text) assessment is provided in **Table 2**.

Table 2: Relevant articles by full-text classified according to the EFSA 2092 GD, Point 5.4.1

Section	Relevant articles by full-text (EFSA 2092 GD, Point 5.4.1)		
	Category A ^{a)}	Category B ^{b)}	Category C ^{c)}
Ecotoxicology	10	5	2
E-fate	0	3	0
Residues	0	9	0
Toxicology	0	15	6
Total	10	32	8

^{a)} Category A: Articles, which provide data for establishing or refining risk assessment parameters.

^{b)} Category B: Articles relevant to the data requirement but in the opinion of the applicant providing only supplementary information that does not alter existing risk assessment.

^{c)} Category C: Articles for which relevance cannot be clearly determined.

All articles (and their translations) evaluated at full text level (detailed assessment) **were submitted** to the AGG in a Portable Document Format (PDF).

Please refer to **Appendix 2** (page 72) to see the article selection process in detail.

2 Introduction

A literature search for glyphosate and its metabolites¹ was conducted according to the requirements stated in the EFSA 2092 Guidance Document - EFSA Journal 2011;9(2):2092 “*Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009*”², and the Appendix to the EFSA 2092 Guidance Document “*Further guidance on performing and presenting the literature search*”³, and the EFSA Supporting publication from 2019⁴ “*Administrative guidance on submission of dossiers and assessment reports for the peer-review of pesticide active substances*”.

In addition, a recommendation by the Assessment Group on Glyphosate (AGG) on how to present the literature search in the dossier has been followed. Please refer to **Appendix 1** (page 71) for more details.

In June 2020, a Literature Review Report (Document ID: 108689-CA9-1) summarizing results of the search of the glyphosate scientific peer-reviewed open literature published from January 2010 to December 2019 was submitted to the AGG as part of the glyphosate AIR5 dossier. In July 2020 during the dossier completeness check (point 23)⁸, the AGG requested a top-up search for glyphosate open literature covering the publication period of January 2020 to June 2020. In October 2020, a Literature Review Report (Document ID: 113898-CA9-1) summarizing results of this top-up search was submitted to the AGG.

Furthermore, three additional supplementary literature searches of the glyphosate scientific peer-reviewed open literature were performed in January 2021, May 2021, and September 2021. The first search, from January 2021, covers the publication period of July 2020 to December 2020 and is summarized in the Literature Review Report Document ID: 113898-CA9-2. The second search, from May 2021, covers the publication period of January 2021 to 14 May 2021 and is summarized in this Literature Review Report (Document ID: 113898-CA9-3). The third search, from September 2021, covers the publication period of 14 May 2021 to August 2021 and is summarized in this Literature Review Report (Document ID: 113898-CA9-4). Details for this search are provided below.

The search has been conducted via the online service provider STN (www.stn-international.de) that provides access to a broad range of databases and to published research, journal literature, patents, structures, sequences, properties, and other data.

To offer a comprehensive literature search covering the requirements of the EFSA 2092 GD eleven databases have been used: AGRICOLA, BIOSIS, CABA, HCAPLUS, EMBASE, ESBIODBASE, MEDLINE, TOXCENTER, FSTA, PQSCITECH, and SCISEARCH.

Please refer to **Table 3** for more details on the literature search.

⁸ AGG’s letter dated 10-July-2020, subject “Glyphosate: Check of completeness of the supplementary dossier for renewal of approval under Commission Implementing Regulation (EU) No 844/2012”, section 2: Elements to be submitted in accordance with Article 11(5) of Regulation (EU) No 844/2012, point 23.

Table 3: Overview of the search conducted for glyphosate and its metabolites

Performed for	Covering publication period	Conducted on
Glyphosate AMPA N-acetyl-AMPA N-acetyl-glyphosate HMPA N-methyl-AMPA N-glyceryl-AMPA N-malonyl-AMPA methylphosphonic acid N-methylglyphosate	14 May 2021 – August 2021	08 September 2021

AMPA = (aminomethyl)phosphonic acid
 HMPA = (hydroxymethyl)phosphonic acid

A “focused search for grouped data requirements”⁹ have been performed (a combination of a substance basic input parameters, keywords and “search filters” defined for the four technical sections – toxicology, residues, environmental fate, and ecotoxicology).

Please refer to **Chapter 2.2** and **2.3** (pages 14 and 16) for the input parameters, keywords and search filters used in the literature search.

Regarding details on the bibliographic databases used in the literature search, please refer to **Chapter 2.1 (Table 4)**.

Regarding the number of articles retrieved in the literature search, please refer to **Chapter 2.1 (Table 5)**.

For the relevance and reliability assessment, please refer to **Chapter 2.4** and **2.5** (pages 19 and 22).

For the full outcome of the literature search and for the individual technical sections, please refer to **Chapter 3** (page 27).

⁹ Citation from the EFSA 2092 Guidance Document: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

2.1 Bibliographic databases used in the literature search

Table 4: Overview of the databases used in the literature search

Data requirement(s) captured in the search	Details of the search(es)			
	1. AGRICOLA	2. BIOSIS	3. CABA	4. HCAPLUS
Justification for choosing the source:	Provides literature from agriculture and related fields, e.g. biology, biotechnology, botany, ecology etc.	Provides the most comprehensive and largest life science literature, e.g. biosciences, biomedicine etc.	Provides literature from agriculture and related sciences, e.g. biotechnology, forestry, veterinary medicine etc.	Provides literature from chemistry and related fields, e.g. biochemistry, chemical engineering etc.
Number of records in the database at the time of search:	> 7.1 million (09/2020)	> 27.8 million (04/2019)	> 9.9 million (09/2020)	> 57.0 million (01/2022)
Database update:	Monthly	Weekly	Weekly	Daily updates bibliographic data; weekly updates indexing data
Date of the search:	08 September 2021	08 September 2021	08 September 2021	08 September 2021
Database covers records:	1970-present	1926-present	1973-present	1907-present and more than 180,000 pre-1907
Date of the latest database update:	04 August 2021	01 September 2021	01 September 2021	07 September 2021
Language limit:	No	No	No	No
Document types <u>excluded</u> that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	287	239	353	272

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)		
	5. MEDLINE	6. EMBASE	7. TOXCENTER
Justification for choosing the source:	Provides literature from every area of medicine.	Provides literature from biomedical and pharmaceutical fields, e.g. bioscience, biochemistry, human medicine, forensic science, paediatrics, pharmacy, pharmacology, drug therapy, psychiatry, public health, biomedical engineering, environmental science.	Provides literature on pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals.
Number of records in the database at the time of search:	> 33.5 million (01/2022)	> 34.3 million (08/2018)	> 16.2 million (01/2022)
Database update:	Six times each week, with an annual reload	Daily	Weekly
Date of the search:	08 September 2021	08 September 2021	08 September 2021
Database covers records:	1946-present	1974-present	1907-present
Date of the latest database update:	07 September 2021	07 September 2021	06 September 2021
Language limit:	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .		
Total number of records retrieved:	158	120	353

Table 4: Overview of the databases used in the literature search (continued)

Data requirement(s) captured in the search	Details of the search(es)			
	8. FSTA	9. PQSCITECH	10. ESBIOBASE	11. SCISEARCH
Justification for choosing the source:	Provides literature on scientific and technological aspects of the processing and manufacture of human food products, e.g. biotechnology, hygiene and toxicology, engineering etc.	Provides a valuable and huge resource of literature (merge of 25 STN databases) from all science areas and technology; from engineering to lifescience.	Provides comprehensive literature on entire spectrum of biological and biosciences research, e.g. microbiology, biotechnology, ecological & environmental sciences, genetics, plant and crop science, toxicology and many more.	Provides one of the largest multidisciplinary scientific literature covering a broad field of sciences, technology, and biomedicine.
Number of records in the database at the time of search:	> 1.59 million (09/2020)	> 33.6 million (01/2021)	> 9.0 million (01/2021)	> 47.7 million (08/2019)
Database update:	Weekly	Monthly	Weekly	Weekly
Date of the search:	08 September 2021	08 September 2021	08 September 2021	08 September 2021
Database covers records:	1969-present	1962-present	1994-present	1974-present
Date of the latest database update:	03 September 2021	24 August 2021	01 September 2021	06 September 2021
Language limit:	No	No	No	No
Document types excluded that are not "scientific peer-reviewed open literature":	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release	Comments, dissertations, editorials, meetings reports, news, patents, press release
Search strategy:	Details are summarized in Chapter 2.2 and 2.3 .			
Total number of records retrieved:	19	111	129	387

Table 5: Total number of articles retrieved

Scope of the search	After automatic removal of duplicates within the databases in the current search (14 May 2021- Aug 2021)	After applying search filters ^{a)} within the current search (14 May 2021- Aug 2021)	After manual removal of duplicates ^{b)} within the current search (14 May 2021- Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021) ^{c)}
14 May 2021 - Aug 2021 Glyphosate AMPA N-acetyl-AMPA N-acetyl-glyphosate HMPA N-methyl-AMPA N-glyceryl-AMPA N-malonyl-AMPA methylphosphonic acid N-methylglyphosate	1443	1431	543

^{a)} Search filters applied for the four technical sections (residues, environmental fate, toxicology and ecotoxicology). Please refer to **Chapter 2.3** for more details (page 16).

^{b)} Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{c)} Please refer to the Literature Review Report (LRR) 108689-CA9-1, 113898-CA9-1, 113898-CA9-2, and 113898-CA9-3.

Note: LRR 108689-CA9-1 covers the publication period of 1 January 2010 to 31 December 2019, LRR 113898-CA9-1 covers the publication period of 1 January 2020 to 30 June 2020, LRR 113898-CA9-2 covers the publication period of 1 July 2020 to 31 December 2020, 113898-CA9-3 covers the publication period of 1 January 2021 to 14 May 2021.

2.2 Input parameters used in the literature search

The basic input parameters used in the literature search, e.g. IUPAC, chemical name or CAS number, are provided in **Table 6 - Table 15**.

Table 6: Input parameters – active substance Glyphosate

Substance name	Glyphosate Salts: isopropylamine, potassium, ammonium, methylmethanamine
IUPAC / CA name	2-(phosphonomethylamino)acetic acid
CAS number(s)	1071-83-6 Salts: 38641-94-0, 70901-12-1, 39600-42-5, 69200-57-3, 34494-04-7, 114370-14-8, 40465-66-5, 69254-40-6

Table 7: Input parameters – metabolite AMPA

Substance name	AMPA
IUPAC / CA name	(aminomethyl)phosphonic acid
CAS number(s)	1066-51-9

Table 8: Input parameters – metabolite N-acetyl glyphosate

Substance name	N-acetyl glyphosate
IUPAC / CA name	N-acetyl-N-(phosphonomethyl)glycine
CAS number(s)	129660-96-4

Table 9: Input parameters – metabolite N-acetyl AMPA

Substance name	N-acetyl AMPA
IUPAC / CA name	[(acetylamino)methyl]phosphonic acid
CAS number(s)	57637-97-5

Table 10: Input parameters – metabolite HMPA

Substance name	HMPA
IUPAC / CA name	(hydroxymethyl)phosphonic acid
CAS number(s)	2617-47-2

Table 11: Input parameters – metabolite N-methyl AMPA

Substance name	N-methyl AMPA
IUPAC / CA name	[(methylamino)methyl]phosphonic acid
CAS number(s)	35404-71-8

Table 12: Input parameters – metabolite N-glyceryl AMPA

Substance name	N-glyceryl AMPA
IUPAC / CA name	(2,3-dihydroxypropanoylamino)methylphosphonic acid
CAS number(s)	No data

Table 13: Input parameters – metabolite N-malonyl AMPA

Substance name	N-malonyl AMPA
IUPAC / CA name	3-oxo-3-(phosphonomethylamino)propanoic acid
CAS number(s)	no data

Table 14: Input parameters – metabolite methylphosphonic acid

Substance name	methylphosphonic acid
IUPAC / CA name	methylphosphonic acid
CAS number(s)	993-13-5

Table 15: Input parameters – metabolite N-methylglyphosate

Substance name	N-methylglyphosate
IUPAC / CA name	2-[methyl(phosphonomethyl)amino]acetic acid
CAS number(s)	24569-83-3

2.3 Keywords and search filters used in the literature search

The approach used for the search was the “focused search for grouped data requirements”¹⁰, which combines the active substance and metabolite basic input parameters, keywords and search filters defined for each technical section. Please refer to **Table 16** for more details on the keywords used and to **Table 17 - Table 20** for the search filters.

Table 16: Keywords used for the active substance glyphosate and its metabolites

Gly1: Glyphosate and AMPA	glyphosat? OR glifosat? OR glyfosat? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR aminomethyl phosphonic OR aminomethylphosphonic OR 1066-51-9
Gly2: N-acetyl glyphosate and N-acetyl AMPA	2 acetyl phosphonomethyl amino acetic acid OR n acetyl glyphosate OR n acetyl glyphosate OR n acetyl n phosphonomethyl glycine OR 129660-96-4 OR n acetyl ampa OR acetyl amino methyl phosphonic acid OR acetylaminomethyl phosphonic acid OR 57637-97-5
Gly 3: HMPA	2617-47-2 OR hydroxymethanephosphonic acid OR hydroxymethyl phosphonate OR hydroxymethylphosphonate OR hydroxymethyl phosphonic acid OR hydroxymethylphosphonic acid OR methanhydroxyphosphonic acid OR phosphonic acid(1w)hydroxymethyl OR phosphonomethanol
Gly 4: N-methyl AMPA	35404-71-8 OR methylamino methyl phosphonic acid OR methylaminomethyl phosphonic acid OR methylaminomethylphosphonic acid OR n methyl ampa OR nsc 244826 OR phosphonic acid methylamino methyl OR phosphonic acid p methylamino methyl
Gly 4: N-glyceryl AMPA	2 3 dihydroxy 1 oxopropyl aminomethyl phosphonic acid OR 2 3 dihydroxy 1 oxopropyl aminomethylphosphonic acid OR n glyceryl ampa
Gly 4: N-malonyl AMPA	3 oxo 3 phosphonomethyl amino propanoic acid OR 3 oxo 3 phosphonomethyl aminopropanoic acid OR n malonyl ampa
Gly 4: methylphosphonic acid	993-13-5 OR dihydrogen methylphosphonate OR methanephosphonic acid OR methyl phosphonic acid OR methylphosphonic acid OR nsc 119358 OR phosphonic acid methyl OR phosphonic acid p methyl
Gly 5: N-methylglyphosate (NMG)	24569-83-3 OR 2 methyl phosphonomethyl amino acetic acid OR 2 methyl phosphonomethyl aminoacetic acid OR acetic acid 2 n methyl n phosphonatomethyl amino OR glycine n methyl n phosphonomethyl OR glyphosate n methyl OR methyl glyphosate OR methyl phosphonomethyl amino acetic acid OR methyl phosphonomethyl aminoacetic acid OR n methyl n phosphonomethyl glycine OR n methylglyphosate OR n phosphonomethyl n methyl glycine OR n phosphonomethyl n methylglycine

(1w) = proximity operator (this order, up to 1 word between)

AND / OR / NOT = boolean search operators

? = any character(s)

¹⁰ Citation from the EFSA 2092 GD: *If the number of summary records returned by a single concept search* is extremely large, focused searches for individual or grouped data requirements could be developed. Such searches could combine synonyms for the active substance (one concept) with terms and synonyms for characteristics of the data requirement (second concept).*

*NOTE: Single concept search (as defined in the EFSA 2092 GD document) = using the active substance names and its synonyms.

Table 17: Search filters related to the technical section toxicology

Toxicology
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
tox? OR hazard? OR adverse OR health OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR in vivo OR in vitro OR invivo OR invitro OR mode of action OR skin? OR eye? OR irrit? OR sensi? OR allerg? OR rat OR rats OR dog? OR rabbit? OR guinea pig? OR mouse OR mice OR metabolism OR metabolite? OR metabolic OR distribution OR adsorption OR excretion OR elimination OR kinetic OR cytochrome OR enzym? OR gen? OR muta? OR chromos? OR clastogen? OR DNA OR carcino? OR cancer? OR tumor? OR tumour? OR oncog? OR oncol? OR malign? OR immun? OR neur? OR endocrin? OR hormon? OR gonad? OR disrupt? OR reproduct? OR development? OR malform? OR anomal? OR fertil? OR foet? OR fet? OR matern? OR pregnan? OR embryo? OR epidem? OR medical? OR poison? OR exposure OR operator? OR bystander? OR resident? OR worker? OR occupat? biomonitoring OR human exposure OR microbiome OR oxidative stress OR apoptosis OR necrosis OR cytotoxicity OR Polyoxyethyleneamine OR POEA OR surfactant OR risk assessment?

Table 18: Search filters related to the technical section residues

Residues
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
uptake OR translocation OR rumen OR storage stability OR storage OR stability OR metabolic OR metabolism OR breakdown OR nature of residues OR residue? OR magnitude of residues OR process? OR effects of processing OR dessicant OR preharvest OR preemerg? OR ?resistant? OR ?toleran? OR transgenic OR hydroly? OR rotation? OR succeed? OR plant? OR crop? OR feed? OR animal? OR livestock? OR hen OR cattle OR ruminant? OR goat? OR cow? OR pig? OR dietary OR assessment OR risk assessment OR consum? OR exposure

Table 19: Search filters related to the technical section environmental fate

Environmental fate
[Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
soil OR water OR sediment OR degradat? OR photo? OR soil residues OR soil accumulat? OR soil contaminat? OR mobility OR sorption OR column leaching OR aged residue OR leach? OR lysimeter OR groundwater OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR transport OR micronutrient OR phosphate OR iron OR manganese OR half-life OR halflife OR half-lives OR halflives OR DT50 OR kinetics OR off-site movement OR removal OR drinking water OR water treatment processes OR atmospheric deposition OR tile-drains OR surface water OR monitoring data OR disinfectant OR ozone OR tillage OR infiltration OR hard surface OR rainwater OR rain water OR chelat? OR complex? OR mineralization OR persistence OR ligand

Table 20: Search filters related to the technical section ecotoxicology

Ecotoxicology [Gly1] OR [Gly2] OR [Gly3] OR [Gly4] OR [Gly5] AND the following search filters
tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR plant AND submerge? OR emerge? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator OR solitary OR alg? OR aquatic OR freshwater OR vertebrat? OR mammal? OR rat OR mouse OR mice OR rabbit OR hare OR protection OR model? OR vole OR pest OR arthropod? OR beneficials OR typhlodromus OR aphidius OR parasitoid OR predator OR chrysoperla OR Orius OR spider OR worm? OR ?worm OR Eisenia OR soil OR collembol? OR macro organism OR folsomia OR springtail OR decompos? OR micro organisms OR microorganisms OR microbial OR carbon OR nitrogen OR plant? OR vegetative vigo? OR seedling OR germination OR monocot? OR dicot? OR sewage OR activated sludge OR biodegrad? OR bioaccumulation? OR amphib? OR reptile? OR aquatic plant OR beneficial

2.4 Relevance assessment

After removal of duplicates, the remaining articles were assessed for their relevance. First, at “title / abstract level” (so-called “rapid assessment”) and second, at “full-text level” (so called “detailed assessment”).

Articles that were identified as “non-relevant” in the rapid assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For articles that were not excluded in the rapid assessment (potentially relevant articles and articles of an unclear relevance) a detailed relevance assessment of a full-text document was performed.

Articles that were identified as “non-relevant” in the detailed assessment were excluded from further evaluation and a justification for their non-relevance was provided.

For both assessments (rapid and detailed) the same criteria for non-relevance were applied (see **Chapter 2.4.1** and **2.4.2**).

2.4.1 Criteria applied for “non-relevance”

Articles identified as “non-relevant” in the rapid and detailed assessments belong to one of the following categories and were excluded from further evaluation. A justification for their non-relevance was provided.

- Publications related to efficacy (resistance related articles, new uses of control of pest / crops) or to agricultural / biological research (crop science, breeding, fertilization, tillage, fundamental plant physiology / micro- / molecular biology).
- Publications dealing with analytical methods / development.
- Publications describing new methods of synthesis (discovery / developments) or other aspects of basic (organic / inorganic) chemistry.
- Patents.
- Wastewater treatment.
- Abstracts referring to a conference contribution that does not contain sufficient data / information for regulatory risk assessment.
- Publications focusing on genetically modified organisms / transgenic crops; no data directly relevant to glyphosate evaluation (e.g. crop compositional analysis, gene flow, protein characterization).
- Publications where glyphosate or a relevant metabolite were not the focus of the publication.
- Secondary information including scientific and regulatory reviews¹¹.
- Articles dealing with political / socio / economic analysis.
- Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity).
- Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes.
- Findings not related to ecotoxicology, toxicology, residues, and environmental fate.
- Publications not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.).

¹¹ Reviews have been partly evaluated on full text level as well – case by case decision.

- Publications dealing with a Roundup¹² formulation / other glyphosate formulations that is not the representative formulation for the AIR5 dossier and thus not relevant to the EU glyphosate renewal.
- Publications dealing with general pesticide exposures (not glyphosate specific).
- Publications generating endpoints that are not relatable to the EU level regulatory risk assessment (e.g. findings based on enzyme, cellular and molecular level etc.).
- Opinion articles where no new data is provided that can be used for the EU regulatory risk assessment.

2.4.2 Additional criteria for articles on the health and exposure of glyphosate

The scientific literature on the health effects of glyphosate can be subdivided in two main parts:

- Articles containing data on glyphosate acid and salts and on the reference glyphosate formulation MON 52276, and
- Articles only containing data on glyphosate formulations and/or co-formulants that have a composition different from that of the reference formulation MON 52276.

In the case of articles only relating to glyphosate formulations *in vitro* testing with the exception of cell/tissue systems¹³ that are likely to come in direct contact with formulations and glyphosate formulations containing other active ingredients are excluded. The reason for the exclusion of *in vitro* testing of formulations to assess health effects as a result of systemic exposure is the presence of surfactants which produce cell toxicity based on the destabilization of the cell membrane and the mitochondrial membrane thus masking the specific toxicity of glyphosate. The toxicity of the co-formulants in combination with glyphosate is dependent on the concentration and the nature of the co-formulants and can be addressed on a case-by-case basis during the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

In the relevance of glyphosate data, those articles have been considered as not relevant (and reliable) for the assessment for systemic toxicity when only *in vitro* results are presented with glyphosate concentrations above 1 mM. This is because it is physiologically not possible to attain such concentrations in standard regulatory *in vivo* testing due to the limited oral bioavailability (approx. 20%), very low dermal absorption, and rapid systemic elimination of glyphosate in *in vivo* test systems. It thus makes no sense to include such data in the risk assessment of glyphosate. Exceptions can be made in the event of direct contact with formulations resulting in localized effects, but then there is the contribution of the toxicity of the co-formulants which can be better addressed in the evaluation of formulations on an ad-hoc basis through Zonal and Member State formulation registrations.

¹² Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contains a surfactant polyethoxylated tallow amine (also polyoxyethyleneamine, POEA) which is not permitted for use in the EU. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in articles dealing with POEA based Roundup formulations cannot be related to the representative formulation MON 52276 which is quaternary-ammonium based (and not POEA based).

¹³ Glyphosate-based herbicides (GBH) contain surfactants that destabilize the cell membrane and the mitochondrial membrane and thus produce a toxicity that is not representative for glyphosate (see Levine S. L. et al, *Cell Biol. Toxicol.* (2007) 23:385-400). This has been clearly demonstrated in the scientific literature and also in some papers reviewed for this submission where *in vitro* glyphosate toxicity is compared against that of GBH and surfactants.

The limit of 1 mM has been based on the single dose oral pharmacokinetic data of a formulation containing 71.7% w/w glyphosate where an oral dose of 1,430 mg/kg bw in the rat gives plasma levels of 38.1 µg/mL or 0.225 mM after 2 hours. When extrapolated linearly (which is possible for glyphosate because it is not subject to hepatic metabolism) this gives plasma levels of 53.3 µg/mL or 0.315 mM at 2 hours after oral intake of 2,000 mg/kg bw and 107 µg/mL or 0.630 mM at 2 hours after oral intake of 4,000 mg/kg bw. A systemic concentration of glyphosate of 1 mM would then represent an oral dose of more than 6,000 mg/kg bw which is completely unreasonable for repeat dose experimental *in vivo* testing under today's OECD test guidelines. The ADI for glyphosate of 0.5 mg/kg bw/day corresponds with a daily systemic concentration of 0.17 µg/mL or 1 µM when a 60 kg person with 36 L extracellular fluid is considered with a glyphosate oral bioavailability of 20%. The daily systemic dose of glyphosate on the day of application (i.e. highest exposure day), based on the geometric mean of 3.2 µg/L in urine, of glyphosate applicators in the US is approx. 0.0001 mg/kg bw/day (Acquavella, 2004¹⁴) which is 1000 times less than the systemic dose (0.1 mg/kg bw) corresponding with the ADI oral dose of 0.5 mg/kg bw with 20% oral bioavailability.

Many articles that have been considered relevant for the risk assessment of glyphosate and have been assessed for reliability on full text basis, contain experimental data as well on glyphosate as such as on formulations (different from MON 52276) and co-formulants. In such cases, only the toxicology data pertinent to glyphosate and to the reference formulation (if that can be clearly stated by the author of the article) are summarized and discussed. In the case of articles on exposure monitoring and epidemiology, exposure to glyphosate formulations are considered.

2.4.3 Categorization of “relevant” articles at full-text level

Articles that were not excluded in the detailed assessment (see **Chapter 2.4.1** and **2.4.2**) were categorized as recommended in the EFSA 2092 GD - EFSA Journal 2011;9(2):2092, Point 5.4.1.

Category A *Studies that provide data for establishing or refining risk assessment parameters. These studies should be summarised in detail following the subsequent steps of the OECD Guidance documents (OECD, 2005; 2006) and should be considered for reliability.*

Category B *Studies that are relevant to the data requirement, but in the opinion of the applicant provide only supplementary information that does not alter existing risk assessment parameters. A justification for such a decision should be provided.*

Category C *Studies for which relevance cannot be clearly determined. For each of these studies the applicants should provide an explanation of why the relevance of such studies could not be definitively determined.*

The list of Category A articles can be found in **Table 32** and **Table 33**. The list of Category B articles and the justifications can be found in **Table 34** and **Table 35**. The list of Category C articles and the explanations can be found in **Table 36** and **Table 37**.

All articles (and their translations) evaluated at full text level (detailed assessment) were submitted to the AGG in a Portable Document Format (PDF).

¹⁴ Acquavella J. F. *et al.* (2004), Environmental Health Perspectives, 112(3), 321-326.

2.5 Reliability assessment

For articles, which were identified, in the detailed assessment, as relevant articles of Category A (see **Chapter 2.4.3**) a reliability assessment was performed. The reliability criteria for each technical section are summarized in **Table 21 - Table 23**.

For relevant articles of Category A that were classified either as reliable (without restrictions) or reliable with restrictions, summaries were compiled.

Articles of Category A which were classified as non-reliable were downgraded to articles of Category B and justification for such a decision was provided.

Table 21: Reliability criteria for ecotoxicology, environmental fate and residues

Applied for	Reliability criteria
Ecotoxicology, Environmental Fate, Residues	For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines are met.
Ecotoxicology, Environmental Fate, Residues	(No) previous exposure to other chemicals is documented (where relevant).
Ecotoxicology	For aquatic studies, the test substance is dissolved in water or where a carrier is required, it is appropriate (non-toxic) and a carrier control / positive control is considered in the test design.
Environmental Fate, Residues	The test substance is dissolved in water or non-toxic solvent.
Ecotoxicology, Environmental Fate, Residues	Test item is sufficiently documented, and reported (i.e. purity, source, content, storage conditions).
Ecotoxicology	For tests including vertebrates, compliance of the batches used in toxicity studies compared to the technical specification.
Ecotoxicology	Species used in the experiment are clearly reported, including source, experimental conditions (where relevant): strain, adequate age/life stage, body weight, acclimatization, temperature, pH, oxygen (dissolved oxygen for aquatic tests) content, housing, light conditions, humidity (terrestrial species) incubation conditions, feeding.
Ecotoxicology	The validity criteria from relevant test guidelines can be extrapolated across different species but not necessarily across different test designs. If different, then the nature of the difference and impact should ideally be discussed.
Ecotoxicology, Environmental Fate, Residues	Only glyphosate or its metabolites is the test substance (excluding mixture), and information on application of the test substance is described.
Ecotoxicology, Environmental Fate, Residues	The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite).
Ecotoxicology, Environmental Fate, Residues	Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
Ecotoxicology, Environmental Fate, Residues	Analytical verifications performed in test media (concentration) / collected samples, stability of the test substance in test medium should be documented.

Applied for	Reliability criteria
Ecotoxicology	The test has been performed in several dose levels (at least 3) including a positive / negative control where relevant.
Ecotoxicology	Suitable exposure throughout the whole exposure period was demonstrated and reported.
Ecotoxicology	A clear concentration response relationship is reported – in studies where the dose response test design is employed.
Ecotoxicology	A sufficient number of animals per group to facilitate statistical analysis reported: mortality in control groups reported, observations/findings in positive/negative control clearly reported (where relevant).
Ecotoxicology, Environmental Fate, Residues	Assessment of the statistical power of the assay is possible with reported data.
Ecotoxicology, Environmental Fate, Residues	Statistical methodology is reported (e.g., checking the plots and confidence intervals).
Ecotoxicology	Description of the observations (including time-points), examinations, and analyses performed, with (where relevant) dissections being well documented.
Ecotoxicology	For terrestrial ecotoxicological studies in the laboratory or the field, the substrates used should be adequately described e.g. nature of substrate i.e. species of leaf or soil type.
Ecotoxicology, Environmental Fate, Residues	Field locations relevant / comparable to European conditions.
Ecotoxicology, Environmental Fate, Residues	Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon).
Ecotoxicology, Environmental Fate	Other soils where information on characterization by the parameters: pH, texture, CEC, organic carbon, bulk density, water holding capacity, microbial biomass.
Ecotoxicology, Environmental Fate, Residues	For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year.
Ecotoxicology, Environmental Fate	For soil samples, sampling from A-horizon, top 20 cm layers; soils freshly from field preferred (storage max 3 months at 4 +/- 2°C).
Ecotoxicology, Environmental Fate, Residues	Data on precipitation is recorded.
Environmental Fate	The temperature was in the range between 20-25°C and the moisture was reported.
Environmental Fate	The presence of glyphosate identified in samples were collected from European groundwater, soil, surface waters, sediments or air.
Ecotoxicology	For lab terrestrial studies, the temperature was appropriate to the species being tested and generally should fall within the range between 20-25°C and soil moisture / relative humidity was reported.
Ecotoxicology	For bee studies, temperature of the study should be appropriate to species.
Ecotoxicology	For lab aquatic studies:
	The source and / or composition of the media used should be described.
	The temperature of the water should be appropriate to the species being tested and generally fall within the 15-25°C.

Applied for	Reliability criteria
Ecotoxicology, Residues	The residue data can be linked to a clearly described GAP table, appropriate in the context of the renewal of approval of glyphosate (crop, application method, doses, intervals, PHI).
Ecotoxicology, Environmental Fate, Residues	Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate, and where relevant its metabolites.
Ecotoxicology, Environmental Fate, Residues	Analytical methods are clearly described; and adequate statement of specificity and sensitivity of the analytical methods is included.
Ecotoxicology	Assessment of the ECX for the width of the confidence interval around the median value; and the certainty on the level of protection offered by the median ECX is reported.
Environmental Fate	Radiolabel characterization: purity, specific activity, location of label is reported.
Environmental Fate	If degradation kinetics are included: data tables / model description / statistical parameters for kinetic fit to be provided.
Environmental Fate, Residues	Monitoring data: description of matrix analysed, and analytical methods to be fully described.
Environmental Fate	Clear description of application rate and relevance to approved uses.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 22: Reliability criteria for toxicology – epidemiology and exposure studies

Reliability criteria – toxicology	
Epidemiology studies	Exposure studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines/practices.	Study in accordance to valid internationally accepted testing guidelines/practices.
Study completely described and conducted following scientifically acceptable standards.	Study performed according to GLP.
	Study completely described and conducted following scientifically acceptable standards.
Test substance	Test substance
Exposure to formulations with only glyphosate as a.i.	Exposure to formulations with only glyphosate as a.i.
Exposure to formulations with glyphosate combined with other a.i.	Exposure to formulations with glyphosate combined with other a.i.
Exposure to various formulations of pesticides.	Exposure to various formulations of pesticides.
Study	Study
Study design – epidemiological method followed.	Study design clearly described.
Description of population investigated.	Population investigated sufficiently described.
Description of exposure circumstances.	Exposure circumstances sufficiently described.
Description of results.	Sampling scheme sufficiently documented.
Have confounding factors been considered.	Analytical method described in detail.
Statistical analysis.	Validation of analytical method reported.
	Monitoring results reported.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

Table 23: Reliability criteria for toxicology – *in vitro* and *in vivo* studies

Reliability criteria – toxicology and metabolism	
<i>In vitro</i> studies	<i>In vivo</i> studies
Guideline-specific	Guideline-specific
Study in accordance to valid internationally accepted testing guidelines.	Study in accordance to valid internationally accepted testing guidelines.
Study performed according to GLP.	Study performed according to GLP.
Study completely described and conducted following scientifically acceptable standards.	Study completely described and conducted following scientifically acceptable standards.
Test substance	Test substance
Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions).	Test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions).
Only glyphosate acid or one of its salts is the tested substance.	Only glyphosate acid or one of its salts is the tested substance.
AMPA or other glyphosate metabolite is the tested substance.	AMPA or other glyphosate metabolite is the tested substance.
Study	Study
Test system clearly and completely described.	Test species clearly and completely described.
Test conditions clearly and completely described.	Test conditions clearly and completely described.
Metabolic activation system clearly and completely described.	Route and mode of administration described.
Test concentrations in physiologically acceptable range (< 1 mM).	Dose levels reported.
Cytotoxicity tests reported.	Number of animals used per dose level reported.
Positive and negative controls.	Method of analysis described for analysis test media.
Complete reporting of effects observed.	Validation of the analytical method.
Statistical methods described.	Analytical verifications of test media.
Historical negative and positive control data reported.	Complete reporting of effects observed.
Dose-effect relationship reported.	Statistical methods described.
	Historical control data of the laboratory reported.
	Dose-effect relationship reported.
Overall assessment: Reliable / Reliable with restrictions / Not reliable	

3 Search results

The full outcome of the literature search and evaluation is provided below.

Table 24: Summary of the literature search – all technical sections

	Number	Justification
Total number of articles retrieved from the search.	2428	n.a.
Total number of articles after removal of duplicates within all databases.	1443	n.a.
Total number of articles after manual removal of duplicates. ^{a)}	543	n.a.
Number of articles excluded after rapid assessment (title / abstract).	470	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	73	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	23	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	50	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	10	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (14 May 2021 – Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 25: Results of the article selection process for ecotoxicology

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	82	n.a.
Number of articles excluded after rapid assessment (title / abstract).	50	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	32	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	15	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	17	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	10	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (14 May 2021 – Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 26: Results of the article selection process for environmental fate

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	61	n.a.
Number of articles excluded after rapid assessment (title / abstract).	55	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	6	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	3	See Table 38
Number of articles not excluded after detailed assessment. ^{b)}	3	See Table 32-Table 37
Number of summaries presented in the dossier. ^{c)}	0	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (14 May 2021 – Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 27: Results of the article selection process for residues

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	13	n.a.
Number of articles excluded after rapid assessment (title / abstract).	4	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	9	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	0	See Table 38
Number of articles not excluded after detailed assessment ^{b)}	9	See Table 32-Table 37
Number of summaries presented in the dossier ^{c)}	0	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (14 May 2021 – Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 28: Results of the article selection process for toxicology

	Number	Justification
Total number of articles after manual removal of duplicates ^{a)}	69	n.a.
Number of articles excluded after rapid assessment (title / abstract).	43	See the Literature Review Excel File.
Total number of full-text documents assessed in detail	26	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	5	See Table 38
Number of articles not excluded after detailed assessment ^{b)}	21	See Table 32-Table 37
Number of summaries presented in the dossier ^{c)}	0	See Table 32, Table 33

^{a)} After removal of duplicates within the current search (14 May 2021 – Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 29: Results of the article selection process for analytical methods

	Number	Justification
Total number of articles after manual removal of duplicates ^{a)}	43	n.a.
Number of articles excluded after rapid assessment (title / abstract).	43	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (14 May 2021 – Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 30: Results of the article selection process for efficacy / agronomy

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	237	n.a.
Number of articles excluded after rapid assessment (title / abstract).	237	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (14 May 2021 – Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 31: Results of the article selection process for “other non-relevant categories”

	Number	Justification
Total number of articles after manual removal of duplicates. ^{a)}	38	n.a.
Number of articles excluded after rapid assessment (title / abstract).	38	See the Literature Review Excel File.
Total number of full-text documents assessed in detail.	n.a.	n.a.
Number of articles excluded after detailed assessment (<i>i.e.</i> not relevant).	n.a.	n.a.
Number of articles not excluded after detailed assessment. ^{b)}	n.a.	n.a.
Number of summaries presented in the dossier. ^{c)}	n.a.	n.a.

^{a)} After removal of duplicates within the current search (14 May 2021 – Aug 2021) and entries found already in the previous searches (Jan 2010 – 14 May 2021). Additional duplicates occurred due to different update frequencies within each database and entries of publications ahead of print.

^{b)} All relevant articles by full-text belonging to the relevance Category A, B, C (acc. to the EFSA Journal 2011;9(2):2092, [Point 5.4.1](#)). For details, please refer to Chapter 2.4.3.

^{c)} Summaries were compiled for relevant articles of Category A and classified either as reliable or reliable with restrictions.

Table 32: Relevant (category A) articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
1	CA 8.1.5	Diaz-Martín R. D. et al.	2021	Short exposure to glyphosate induces locomotor, craniofacial, and bone disorders in zebrafish (<i>Danio rerio</i>) embryos.	Environmental toxicology and pharmacology, (2021), Vol. 87, Article No. 103700	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
2	CA 8.2.2, CP 10.2.2	Le Du-Carree J. et al.	2021	Developmental effect of parental or direct chronic exposure to environmental concentration of glyphosate on the larvae of rainbow trout, <i>Oncorhynchus mykiss</i> .	Aquatic toxicology, (2021), Vol. 237, Article No. 105894	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
3	CA 8.2.2, CP 10.2.2	Le Du-Carree J. et al.	2021	Generational effects of a chronic exposure to a low environmentally relevant concentration of glyphosate on rainbow trout, <i>Oncorhynchus mykiss</i> .	The Science of the total environment, (2021), Vol. 801, Article No. 149462	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
4	CA 8.2.6.1	Kaoboorn S. et al.	2021	Toxicity response of <i>Chlorella</i> microalgae to glyphosate herbicide exposure based on biomass, pigment contents and photosynthetic efficiency.	Plant Science Today, (2021), Vol. 8, No. 2, pp. 293-300	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
5	CA 8.2.7	Mendes E. J. et al.	2021	Isolated and combined effects of glyphosate and its by-product aminomethylphosphonic acid on the physiology and water remediation capacity of <i>Salvinia molesta</i> .	Journal of hazardous materials, (2021), Vol. 417, Article No. 125694.	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
6	CA 8.2.8	Vera M. S. et al.	2021	First evaluation of the periphyton recovery after glyphosate exposure.	Environmental pollution, (2021), Vol. 290, Article No. 117998	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
7	CP 10.1.3	Goodman R. M. et al.	2021	Influence of Herbicide Exposure and Ranavirus Infection on Growth and Survival of Juvenile Red-Eared Slider Turtles (<i>Trachemys scripta elegans</i>).	Viruses, (2021), Vol. 13, No. 8	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
8	CP 10.2.1	Fernandez C. et al.	2021	Toxic effects of chlorpyrifos, cypermethrin and glyphosate on the non-target organism <i>Selenastrum capricornutum</i> (Chlorophyta).	Anais da Academia Brasileira de Ciencias, (2021) Vol. 93, Article No. e20200233	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
9	CP 10.2.1, CP 10.2.2	Houssou A. M. et al.	2021	Acute and Chronic Effects of a Glyphosate and a Cypermethrin-Based Pesticide on a Non-Target Species <i>Eucypris</i> sp. Vavra, 1891 (Crustacea, Ostracoda)	Processes, (2021), Vol. 9, No. 4	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
10	CP 10.4.2.1	Wee J. et al.	2021	Temperature and Aging Affect Glyphosate Toxicity and Fatty Acid Composition in Allonychiurus kimi (Lee) (Collembola).	Toxics, (2021), Vol. 9, No. 6	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.

Table 33: Relevant (category A) articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
1	Diaz-Martín R. D. et al.	CA 8.1.5	2021	Short exposure to glyphosate induces locomotor, craniofacial, and bone disorders in zebrafish (<i>Danio rerio</i>) embryos.	Environmental toxicology and pharmacology, (2021), Vol. 87, Article No. 103700	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
8	Fernandez C. et al.	CP 10.2.1	2021	Toxic effects of chlorpyrifos, cypermethrin and glyphosate on the non-target organism <i>Selenastrum capricornutum</i> (Chlorophyta).	Anais da Academia Brasileira de Ciencias, (2021) Vol. 93, Article No. e20200233	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
7	Goodman R. M. et al.	CP 10.1.3	2021	Influence of Herbicide Exposure and Ranavirus Infection on Growth and Survival of Juvenile Red-Eared Slider Turtles (<i>Trachemys scripta elegans</i>).	Viruses, (2021), Vol. 13, No. 8	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
9	Houssou A. M. et al.	CP 10.2.1, CP 10.2.2	2021	Acute and Chronic Effects of a Glyphosate and a Cypermethrin-Based Pesticide on a Non-Target Species <i>Eucypris</i> sp. Vavra, 1891 (Crustacea, Ostracoda)	Processes, (2021), Vol. 9, No. 4	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
4	Kaeofoon S. et al.	CA 8.2.6.1	2021	Toxicity response of <i>Chlorella</i> microalgae to glyphosate herbicide exposure based on biomass, pigment contents and photosynthetic efficiency.	Plant Science Today, (2021), Vol. 8, No. 2, pp. 293-300	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
2	Le Du-Carree J. et al.	CA 8.2.2, CP 10.2.2	2021	Developmental effect of parental or direct chronic exposure to environmental concentration of glyphosate on the larvae of rainbow trout, <i>Oncorhynchus mykiss</i> .	Aquatic toxicology, (2021), Vol. 237, Article No. 105894	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
3	Le Du-Carree J. et al.	CA 8.2.2, CP 10.2.2	2021	Generational effects of a chronic exposure to a low environmentally relevant concentration of glyphosate on rainbow trout, <i>Oncorhynchus mykiss</i> .	The Science of the total environment, (2021), Vol. 801, Article No. 149462	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
5	Mendes E. J. et al.	CA 8.2.7	2021	Isolated and combined effects of glyphosate and its by-product aminomethylphosphonic acid on the physiology and water remediation capacity of <i>Salvinia molesta</i> .	Journal of hazardous materials, (2021), Vol. 417, Article No. 125694.	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.
6	Vera M. S. et al.	CA 8.2.8	2021	First evaluation of the periphyton recovery after glyphosate exposure.	Environmental pollution, (2021), Vol. 290, Article No. 117998	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
10	Wee J. et al.	CP 10.4.2.1	2021	Temperature and Aging Affect Glyphosate Toxicity and Fatty Acid Composition in <i>Allonychiurus kimi</i> (Lee) (Collembola).	Toxics, (2021), Vol. 9, No. 6	The article has been classified as relevant by full text - Category A and reliable with restrictions: A detailed summary for this article is provided.

Table 34: Relevant but supplementary (category B) articles after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
11	CA 5.4.1	Nagy K. et al.	2021	Micronucleus Formation Induced by Glyphosate and Glyphosate-Based Herbicides in Human Peripheral White Blood Cells.	Frontiers in public health, (2021) Vol. 9, Article No. 639143	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. The article provides information on the genotoxicity profile of glyphosate. Glyphosate a.s. and 3 GBHs were tested. Roundup Mega containing ethoxylated etheralkylamine), Glyfos containing polyethoxylated tallow amine and Fozat containing a wetting agent C12-14-alkyldimethyl betaine. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure (e.g. ethoxylated etheralkylamine), are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the fact that the formulations tested contain ethoxylated etheralkylamine (similar chemical structure to POEA), POEA and betaine (not present in the AIR5 glyphosate representative formulation), the article is not considered relevant for use in risk assessment for the formulations as the effects observed cannot be attributed to glyphosate a.s. The article nevertheless presents relevance with regard to pure glyphosate. The study did not fully adhere to OECD 487, including, the purity of glyphosate is missing, no HCD available and no concurrent positive controls. Following AIR2 approval, however, all glyphosate formulations were required to be tested for clastogenicity using OECD 487 for re-approval under Article 43, and the quality of reporting in these studies should be compared with the results presented within this paper.
12	CA 5.6, CA 5.7	Cattani D. et al.	2021	Perinatal exposure to a glyphosate-based herbicide causes dysregulation of dynorphins and an increase of neural precursor cells in the brain of adult male rats.	Toxicology, (2021), Vol. 461, Article No. 152922	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on the effect of a glyphosate formulation on neurodevelopmental processes associated to long-term brain changes. Only one dose/no dose-response relationship. No HCD reported and no method of analysis.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
13	CA 5.7	Bicca Ferreira D. et al.	2021	A subchronic low-dose exposure of a glyphosate-based herbicide induces depressive and anxious-like behavior in mice: quercetin therapeutic approach.	Environmental science and pollution research international, (2021), Vol. 28, pp. 67394-67403	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on the effect of a glyphosate formulation on the central nervous system and the therapeutic effect of the flavonoid quercetin. Only one dose/no dose-response relationship. No HCD reported and no method of analysis.
14	CA 5.8	Pu Y. et al.	2021	Autism-like Behaviors in Male Juvenile Offspring after Maternal Glyphosate Exposure.	Clinical psychopharmacology and neuroscience : the official scientific journal of the Korean College of Neuropsychopharmacology, (202), Vol. 19, No. 3, pp. 554-55	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The aim of the study was to investigate whether maternal exposure of pure glyphosate could cause ASD-like behaviours in juvenile offspring. Water or 0.098% glyphosate (980 mg/L) was administered as drinking water from E5 to P21 (weaning). This level of glyphosate acid in water has a very low pH of approximately 2.3, which may confound the results of the test due to either pH effects on the gastrointestinal tract, or reduced water consumption in the test group causing some degree of dehydration. Male offspring showed ASD-like behavioural abnormalities (i.e., increasing grooming behaviour and social interaction deficit) after maternal exposure of glyphosate. Purity of the active substance missing. Only one dose, no dose-response relationship established, number of animals/group is unclear. Dosing level in water is at least several orders of magnitude higher than worst case human dietary exposures and pH of dose group water is very low. Key parameters of water and food consumption not reported. No record of in-life clinical observations. No HCD reported and no method of analysis. No positive controls employed to verify the validity or accuracy of the method and therefore the relevance to human health assessments is at best tenuous.
15	CA 5.8	Qiu S. et al.	2021	Response of the nuclear xenobiotic receptors to alleviate glyphosate-based herbicide-induced nephrotoxicity in weaned piglets.	Environmental science and pollution research international, (2021), Vol. 29, pp. 2707-2717	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on the effect of Roundup on piglet kidneys. The study also investigates the role of kidney nuclear xenobiotic receptors. The piglet is not a model validated in the toxicological studies in the EU evaluations, however the information can still be used as supplementary. No dose-effect relationship. No HCD reported and no method of analysis.
16	CA 5.8	Sopko B. et al.	2021	Glyphosate Interaction with eEF1 α 1 Indicates Altered Protein Synthesis: Evidence for Reduced Spermatogenesis and Cytostatic Effect.	ACS omega, (2021), Vol. 6, No. 23, pp. 14848-14857	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The paper is a review of the literature that provides information on the mode of action of glyphosate via interaction with eEF1 α 1 pathway and spermatogenesis and cytostatic effects through a combination of in silico, in vitro and in vivo information. The aim of the study was to evaluate a previously unknown mechanism to explain a

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						presumption that glyphosate exposure can negatively affect animals, including humans. Computer modeling suggested a probable interaction between glyphosate and eukaryotic translation elongation factor 1 subunit alpha 1 (eEF1 α 1), which was said to be confirmed by microcalorimetry, however, details on the calorimetry method are lacking, including concentration(s) of glyphosate interrogated. Only restricted, nondisrupted spermatogenesis was reported in rats after 100 days (i.e. subchronic, not chronic as reported) glyphosate treatments (0.7 and 7 mg/L ad libitum in drinking water). Although the method notes water consumption was monitored, neither water consumption or feed intake were reported. It is important to note, glyphosate is acidic and dose groups drinking water would be a much lower pH than the control group. Only two dose groups were implemented. The results are not consistent with a number of multigenerational rat reproductive studies with doses up to orders of magnitude higher. Cytostatic and antiproliferative effects of glyphosate in GC-1 and SUP-B15 cells were indicated. The meta-analysis of public health data suggested a possible effect of glyphosate use on sperm count, but this is not consistent with reporting in with epidemiology studies or multiple toxicology reproductive studies. Information on purity missing for the pure glyphosate. No HCD. Numerous deficiencies in the in vivo portion and significant underlying assumption in the in silico and meta-analysis.
17	CA 5.8	Truzzi F. et al.	2021	Comparative Evaluation of the Cytotoxicity of Glyphosate-Based Herbicides and Glycine in L929 and Caco2 Cells.	Frontiers in public health, (2021) Vol. 9, Article No. 643898	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This article provides supplementary information on the cytotoxicity of glyphosate but does not alter the risk assessment. No positive control, no metabolic activation. No HCD.
18	CA 5.8.2	Almeida L. L. et al.	2021	Protective effect of melatonin against herbicides-induced hepatotoxicity in rats.	Toxicology Research, (2021), Vol. 10, No. 1, pp. 1-10	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article provides supplementary information on the ability of melatonin to ameliorate toxic effects of glyphosate on the liver. No information on feed and housing conditions, content of test material not available. Several effects observed are from the mixture of Paraquat with Roundup® (i.e. mixture toxicity). There is only one dose/no dose-response relationship. Finally, there is no HCD reported and no method of analysis.
19	CA 5.9	Boffetta P. et al.	2021	Exposure to glyphosate and risk of non-Hodgkin lymphoma: an updated meta-analysis.	La Medicina del lavoro, (2021), Vol. 112, No. 3, pp. 194-199.	The article has been classified as relevant by full text - Category B and not reliable for the following reason: This is a review article, not primary research on a study population. The meta-analysis approach was standard. However, meta-analysis cannot correct for the validity limitations in the included studies, which precludes

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						calculating a valid assessment of the possible relationship between glyphosate and non-Hodgkin's lymphoma. Limited in several of the included case control studies. Especially limited in Leon et al. (2019) where the exposure assessment was based on crops farmed for 84% of the pooled cohort of 316,270. The indirect methodology made it impossible to discriminate those not exposed to specific pesticides or to know with reasonable certainty those exposed to specific pesticides. In addition, date of first exposure would be unknown for crops originally treated with other pesticides and subsequently treated with glyphosate. In fact, it seems likely that the majority of those judged to have been exposed to most specific pesticides were, in fact, not exposed when there were several pesticides registered for use on specific crops. Cases were more likely to participate than controls in several of the case control studies included in the meta-analysis. There was a substantial amount of second-hand information in several of the case control studies. The meta-analysis was not able to address biases in the included studies, especially recall bias, selection bias, and residual confounding.
20	CA 5.9	He Xiu et al.	2021	The relationship between pesticide exposure during critical neurodevelopment and autism spectrum disorder: A narrative review.	Environmental research, (2021), Vol. 203, Article No. 111902	The article has been classified as relevant by full text - Category B and not reliable for the following reason: This is a narrative review article, not an epidemiologic study. There is no study design or study population per se. The two glyphosate epidemiology studies cited in this review involve very unlikely exposure scenarios. One study correlated increasing glyphosate use on crops with increases in the general population rate of autism. The second study defined exposure as proximity of the mother's residence on the birth certificate within a 2,000-meter radius of a glyphosate application recorded in the California Pesticide Use Reporting system. Even assuming the mother was home at the address on the birth certificate at the time of application, no one has ever demonstrated glyphosate exposure at appreciable distances from an application. There was no consideration of personal confounding factors in one study and very limited consideration in the other study. The assessment of autism risk from glyphosate exposure is based on two studies with very unlikely exposure scenarios. Therefore, this review does not provide reliable evidence about a possible association between glyphosate and autism.
21	CA 5.9	Lesieur C. et al.	2021	Urinary glyphosate concentration in pregnant women in relation to length of	Environmental research, (2021), Vol. 203, Article No. 111811	The article has been classified as relevant by full text - Category B and not reliable for the following reason: This study was not designed to study glyphosate per se. The authors took advantage of an ongoing study (TIDES) that had collected a 2nd trimester urine sample from pregnant women to evaluate a possible relationship

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				gestation.		between glyphosate (and AMPA) in urine and length of gestation and pre-term birth. Had the study been designed for glyphosate per se, it is unlikely that a single urine sample would have been planned as the basis for the analysis and other potential environmental exposures in urine or blood would have been assessed. The authors took the opportunity to generate some data about glyphosate (and AMPA) and length of gestation from a study that was designed for other purposes. Adapting data from an ongoing study is efficient and it can be informative when the data collection from the ongoing study matches what would have been collected for a high-quality study of the question at hand. In most instances, however, it results in a study that has important limitations. It is debatable whether pregnant women who come to the 4 university hospitals in the TIDES study is an optimum population for the study of glyphosate and length of gestation. Urine concentrations for these women equate to a glyphosate internal dose that is extremely low – 0.0008 mg/kg or 0.2% of the European ADI – raising the issue of biological implausibility. Also, taking the analysis at face value requires the strong assumption that a single 2nd trimester urine sample reflects the amount of exposure during the etiologically meaningful time period for affecting length of gestation. The authors did not provide a justification for the adequacy of a single 2nd trimester urine sample. It is also worth noting that there are literally hundreds of chemicals that could have been measured in urine (or blood) to study length of gestation. One normally would not choose to focus on such low levels of glyphosate over other internalized chemicals for the study participants and it can be argued that some of those other exposures would have been important to consider in the analyses. The results of the authors' many analyses differed depending on the specific comparisons being made. Median exposure levels did not differ when outcomes were dichotomized as pre and full term. For the overall population, gestational age was not related to glyphosate values (hazard ratio (HR) 1.08, 95% CI 0.91, 1.29), but there was a weak to moderate association when the analysis was restricted to births that were not medically induced (HR 1.31, 95% CI 1.00, 1.71). The authors noted that 41% of births were medically induced, so presumably the HR for those women was somewhat less than 1.0. Likewise, when length of gestation was dichotomized as pre and full term, the odds ratio (OR) for glyphosate for all births was 1.19 (95% CI 0.86, 1.64) and the OR was 1.54 (95% CI 0.97, 2.57) when restricted to births that were

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						not medically induced. Again, it seems likely that the measure of association was somewhat less than 1.0 for the women who were medically induced. On balance, the results did not show a consistent relationship for glyphosate and length of gestation or pre-term birth and the interpretation of the results for those women who were medically induced is uncertain. The various analyses controlled for relatively few personal factors and no environmental factors. One can only speculate whether the results may have residual confounding. In conclusion, the results have very limited relevance for a glyphosate risk assessment. First, it's unclear whether the urine sampling is a valid representation of the internal dose at a relevant time point for the health outcome under study. Second, the range of internal doses for study participants was so low as to suggest biological implausibility. Third, the findings were based on small numbers and varied across a range of analyses, some showing no association and some showing a weak to moderate association. Lastly, there was limited consideration of confounding factors, both personal and environmental.
22	CA 5.9	Odutola M. K. et al.	2021	A systematic review and meta-analysis of occupational exposures and risk of follicular lymphoma	Environmental Research, (2021), Vol. 197, Article No. 110887	The article has been classified as relevant by full text - Category B and not reliable for the following reason: This is a review article of the literature for numerous exposures, including glyphosate, and follicular lymphoma. It is not primary data. The authors used standard meta-analysis routines. However, they had no ability to correct for limitations in the original studies. It seems that the authors had only a superficial knowledge of the details and quality limitations of many of the glyphosate studies because they concluded that the risk of bias was low (viz., systematic error) – other than the small number of cases (viz., random error). Most previous reviewers of glyphosate studies considered the risk of bias to be high for most of the studies.
23	CA 5.9	Silver M. K. et al.	2021	Prenatal Exposure to Glyphosate and Its Environmental Degradate, Aminomethylphosphonic Acid (AMPA), and Preterm Birth: A Nested Case-Control Study in the PROTECT Cohort (Puerto Rico).	Environmental health perspectives, (2021), Vol. 129, No. 5, Article No 57011.	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The authors took the opportunity to generate some data about glyphosate (and AMPA) and preterm birth from a cohort (PROTECT) study that was designed for other purposes than glyphosate per se. Adapting data from an ongoing study is efficient and it can be informative when the data collection from the ongoing study matches what would have been collected during a high-quality study of the question at hand. In most instances, however, the result is studies that have important limitations in study size or necessary information on personal factors and confounders. It is debatable whether pregnant women in the PROTECT cohort, patients at two university hospitals and 5 nearby clinics in northern Puerto Rico, are an

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						optimum population for the study of glyphosate and pre-term birth. Urine concentrations for these women equate to a glyphosate internal dose that is extremely low – a few percent or less of the European ADI – raising the issue of biological implausibility. Also, taking the analysis at face value requires the strong assumption that one or two 2nd trimester urine sample(s) reflects the amount of exposure during the etiologically meaningful time period for affecting length of gestation. The authors did not provide a justification for the adequacy of a single or two 2nd trimester urine sample(s). It is also worth noting that there are literally hundreds of chemicals that could have been measured in urine (or blood) to study length of gestation. One normally would not choose to focus on such low levels of glyphosate over other possible internalized chemicals for the study participants and it can be argued that some of those other exposures would have been important to consider in the analyses. This was noted as a limitation by the authors. The results of the authors' various analyses differed depending on the specific comparison being made. Analyses based on the visit 3 urine samples showed a weak to moderate relationship between glyphosate and pre-term birth, whereas analyses based on the visit 1 urine sample or the average of the visit 1 and 3 urine samples showed near null odds ratios. On balance, the results did not show a consistent relationship between urinary concentration of glyphosate and pre-term birth. The various analyses controlled for relatively few personal factors and environmental factors. One can only speculate whether the results may have residual confounding. In conclusion, the results of this study have very limited relevance for a glyphosate risk assessment. First, it's unclear whether the urine sampling is a valid representation of the internal dose at a relevant time point for the health outcome under study. Second, the range of internal doses for study participants was so low as to suggest biological implausibility. Third, the findings are based on small numbers of cases and varied across a range of analyses, some showing no association and some showing a weak to moderate association. Lastly, there was limited consideration of confounding factors.
24	CA 5.9	Yokoyama S. et al.	2021	Transient glyphosate encephalopathy due to a suicide attempt.	Neuropsychopharmacology reports, (2021), Vol. 41, No. 3, pp. 444-447	The article has been classified as relevant by full text - Category B for the following reason: This is a case report of a man who developed a delayed encephalopathy characterized by confusion seizure activity and decreased perfusion of his left cerebral hemisphere on SPECT 3 days after a suicidal ingestion of formulated glyphosate. On initial presentation the patient was asymptomatic, underwent gastric lavage, which is not indicated in

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						an asymptomatic patient, and was admitted to the psychiatric floor. 3 days later he as noted to have a delirium for which he was treated with mirtazipine. This was discontinued when symptoms grew progressively worse. The authors speculate that the cause of the encephalopathy was glyphosate. This is highly unlikely as glyphosate is not neurotoxic, nor does it cause vascular constriction. A unilateral perfusion deficit is very uncommon in a toxin induced encephalopathy. This case is much more consistent with acute alcohol withdrawal, which is a slow onset syndrome that takes 2-3 days to develop, is characterized by delirium and seizures, reversible vasogenic edema in the hippocampal regions. This presentation is not consistent with glyphosate overdoses and because of the suicidal ingestion should not impact regulatory decisions.
25	CA 5.9	Zhang C. Q. et al.	2021	A case of allergic cutaneous vasculitis caused by glyphosate.	Chinese journal of industrial hygiene and occupational diseases, (2021), Vol. 39, No. 6, pp. 467-468	The article has been classified as relevant by full text - Category B for the following reason: This is a case report of a man who developed purpuric skin lesions involving the palms and leukocytoclastic vasculitis after exposure to an agrichemical that was reported to be glyphosate. His symptoms improved with steroid therapy, recurred upon reexposure 2 times and resolved with steoid treatment. The article claims that the chemistry involved was glyphosate despite the fact that there was no confirmation of exposure through any definitive identification of the product, urine or blood testing for the presence of glyphosate. Glyphosate is not a sensitizer, nor does it cause immune complex deposition in the vasculature. While the patient was worked up for several diseases associated leukocytoclastic vasculitis, they left out several very prominent infectious etiologies that are much more commonly associated with palmar rashes and vasculitides. There is no described mechanism in the literature for this constellation of symptoms and no confirmation that the patient was exposed to glyphosate.
26	CA 6.10	Bergero M. et al.	2021	Agrochemical Contamination of Honey and Bee Bread Collected in the Piedmont Region, Italy	Environments, (2021), Vol. 8, No. 7	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Monitoring data from Piedmont (Italy) on pesticides in bee bread and honey (sampling from 4 apiaries). Glyphosate was the most abundant chemical found in bee bread and honey samples, with levels of <10-542 and 10-34 µg/kg, respectively. Analysis of glyphosate in honey was done according to QuPpe M 1.3 method, however no method validation data are provided in the publication.
27	CA 6.10	Krogh U. et al.	2021	Performance and mineral status of weaning pigs fed diets with different levels of glyphosate	Livestock Science, (2021), Vol. 252, Article No. 104681	The article has been classified as relevant by full text - Category B and reliable without restrictions: This is an experimental study to investigate effects of glyphosate on performance and mineral status of weaning pigs (weight, feed intake and faeces score; intestine

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				and tryptophan.		digesta, blood and urine analysis). Pigs were fed with weaning diet containing various concentrations (20 and 200 mg/kg) of glyphosate, at the highest concentration with and without addition of crystalline tryptophan. Neither feed intake, growth rate, serum mineral concentrations nor faeces score were significantly affected by level or source (pure glyphosate salt vs GBH) of the dietary glyphosate. Well described experimental study on the effect of glyphosate on the performance and mineral status of weaning pigs.
28	CA 6.10	Sorensen M. T. et al.	2021	Feed residues of glyphosate - potential consequences for livestock health and productivity.	Animal, (2021), Vol. 15, No. 1	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This is a literature review report on potential detrimental effects of glyphosate affect livestock gut microbiota and/or mineral status potentially with derived unfavourable effects on animal health and productivity. Some in vitro growth experiments were conducted with bacteria. Some differences were detected regarding the sensitivity of bacterial growth to glyphosate. The in vitro bacterial growth assays can be considered acceptable. However the new experimental data are limited and provide little additional information to existing studies (also in vivo studies) to this topic.
29	CA 6.3	Edge C. B. et al.	2021	The Persistence of Glyphosate in Vegetation One Year after Application	FORESTS, (2021), Vol. 12, No. 5.	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study describes two experiments conducted in Canada, where glyphosate was applied aerially at rates of 1.35-1.8 kg a.s./ha to forestry areas. Samples of vegetation browsed by deer, moose and bear were collected from sprayed and non-sprayed adjacent blocks (down-wind), and analysed for residues of glyphosate and AMPA. Overall, the studies demonstrate that trace levels of glyphosate persist in vegetation for up to one year after application, however, observed concentrations are unlikely to pose risk to wildlife. Analytical work was done at the Agriculture and Food Laboratory at the University of Guelph by means of LC-MS/MS, however no method description and validation data are provided.
30	CA 6.3	Jin Shan et al.	2021	Analysis on pesticide residues level in dry tea materials of Chenxiang Tieguanyin and the preliminary studies on the degradation of pesticide residues.	Journal of Chinese Institute of Food Science and Technology, (2021), Vol. 21, pp. 291-29	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Monitoring data from China on pesticides in oolong tea (Chenxiang Tieguanyin, 89 raw materials analysed). Glyphosate was detected in 13 samples at levels of 0.07-0.79 mg/kg, i.e. below EU and China MRL (2 and 1 mg/kg, respectively). Analytical work was done at the Fujian Inspection and Research Institute for Product Quality by means of LC MS/MS (according to Chinese Standard GB/T 23204-2008), however no method validation data are provided.
31	CA 6.3	Malone M.	2021	Seeking justice, eating toxics: overlooked contaminants in	AGRICULTURE AND HUMAN VALUES, (2021)	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This is a

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				urban community gardens	https://doi.org/10.1007/s10460-021-10236-8	kind of monitoring study in urban community gardens (UCGs), where soil from nine UCGs around Seattle were sampled and analysed for As, Pb, glyphosate and AMPA, and total petroleum hydrocarbons (TPH). Glyphosate and AMPA were found preliminary at two sites. Maximum levels of glyphosate and AMPA were 0.108 and 0.613 mg/kg, respectively, with highest median values of 0.027 and 0.163 mg/kg. Analytical work was done by HRI Laboratories in Iowa by means of LC MS/MS, however no method validation data are provided for soil analyses.
32	CA 6.9	Baudry J. et al.	2021	Estimated dietary exposure to pesticide residues based on organic and conventional data in omnivores, pesco-vegetarians, vegetarians and vegans	Food and Chemical Toxicology, (2021), Vol. 153, Article No. 112179	The article has been classified as relevant by full text - Category B and reliable without restrictions: This is a dietary risk assessment study to investigate uptake of reisdies (incl glyphosate) by different population groups, including omnivores, pesco-vegetarians, vegetarians and vegans, with further distincion between intake of conventional or organic food source. Highest glyphosate intakes of glyphosate were calculated for vegans consuming conventional food (0.0264 µg/kg bw/day), with highest contributor legume vegetables. The study uses data from the NutriNet-Santé study (consumption survey 2013) and pesticide residue data from Chemisches und Veterinäruntersuchungsamt (CVUA) Stuttgart database. The study shows no risks to all consumer groups from glyphosate residues.
33	CA 6.9	Vicini J. L. et al.	2021	Residues of glyphosate in food and dietary exposure.	Comprehensive reviews in food science and food safety, (2021): Ahead of Print	The article has been classified as relevant by full text - Category B and reliable without restrictions: This is a literature review article with focus on 1) analytical methods for glyphosate and AMPA, 2) MRL and monitoring data (market surveys) and 3) dieatry risk assessment. It reflects a well written summary of available knowledge and regulatory requirements/assessments. Scientifically solid overall assessment of glyphosate consumer risk from glyphosate and AMPA.
34	CA 6.9	Wang Y. et al.	2021	Establishment of a HPLC-MS/MS Detection Method for Glyphosate, Glufosinate-Ammonium, and Aminomethyl Phosphoric Acid in Tea and Its Use for Risk Exposure Assessment.	Journal of agricultural and food chemistry, (2021), Vol. 69, No. 28, pp. 7969-7978	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article describes 1) development and optimisation of an analytical method for the determation of glyphosate, AMPA and glufosinate-ammonium, 2) monitoring of tea samples (n = 780) from China, and 3) risk assessment (deterministic and probabilistic) from consumption of teas. The results showed that exposure to PMG, GLU and AMPA caused by drinking tea beverages poses no significant risk to human health. Regarding analytical procedures, it is stated that LOQ for Gly and AMPA was 0.3 mg/kg (derived from calibration standards); however the lowest validated concentration was 1.0 mg/kg.

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35	CA 7.1.4.1	Akyol N. H. et al.	2021	Comparison of sorption and solute transport behaviour of several herbicides in an alkaline agricultural soil	International Journal of Environmental Analytical Chemistry (2021): Ahead of Print	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The objective of this study was to quantify sorption and solute transport of glyphosate in soil column experiments with an alkaline agricultural soil from Turkey. The adsorption coefficient (K _d) for glyphosate was estimated to be 2.14 L/kg. The soil sampling procedure (e.g. depth and timing), soil storage and pesticide history of the soils are not reported. Soil columns (10-cm long by 2-cm diameter) were smaller than required by the guideline (at least 4 cm and a minimum height of 35 cm). The experiments were conducted in saturated columns with flow from bottom to top at a rate of 0.7 mL/min. Test concentrations were high with 20 to 100 mg/L. Only the column effluent was analysed, soil segments were not analysed. Sample analysis was performed using an UV spectrometer with a detection limit of 0.1 mg/L.
36	CA 7.1.4.3	Giuliano S. et al.	2021	Reducing herbicide use and leaching in agronomically performant maize-based cropping systems: An 8-year study.	The Science of the total environment, (2021), Vol. 788, Article No. 147695	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . An 8-year field leaching experiment was carried out at the Domaine de Lamothe - INP PURPAN, Garonne Plain, south-western France (43.506N, 1.237E) from 2011 to 2018. Different cropping systems were compared. Glyphosate and AMPA were detected in less than 50% of the samples and had very low frequencies of leachates with concentration above 1 µg/L (respectively 5% and 0%). No information on the test substance (formulation, purity), the exact application time and the application method is given. Only leachate but no soil samples were analysed. The volume and sampling time of the leachate is not reported. Furthermore, only maximum concentrations of glyphosate and AMPA were reported. It is not reported when (year, season) the maximum concentrations were observed and thus it cannot be connected to glyphosate application or climatic conditions.
37	CA 7.5	Fernandes B. et al.	2020	Levels of glyphosate in vineyard soils and potential adverse effects to the environment.	IOBC/WPRS Bulletin, (2020), No. 154, pp. 129-132	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. The levels of glyphosate and AMPA were monitored in two different vineyards from the Douro Demarcated Region (Portugal) over one year from February 2018 to January 2019. The highest concentrations of glyphosate were observed in February (median value of 2.0 mg/kg). The exact location of the vineyards and the weather conditions are not reported. The application method and rate of the glyphosate formulation as well as the formulation type are not described. No information on soil sampling procedure, depth, sample storage and extraction method is provided. The analytical method is not described with sufficient details and was not validated. No individual concentrations are reported, but only

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						median values and they cannot be assigned to a geographic area.
38	CA 8.1.4	Lopes A. et al.	2021	Evaluation of the genotoxic, mutagenic, and histopathological hepatic effects of polyoxyethylene amine (POEA) and glyphosate on <i>Dendropsophus minutus</i> tadpoles.	Environmental pollution, (2021), Vol. 289, Article No. 117911	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for amphibians (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on vertebrate wildlife. A quantitative endpoint can be established but based on effects at cellular/mololecular level (genotoxicity and mutagenicity). For the histopathological effects that are relevant for the risk assessment, only a qualitative evaluation was conducted. The study cannot be considered as fully reliable because no analytical verification of the test concentrations in water was conducted. In addition, tested individuals provide from samples from a permanent body of water in Brazil and no record of previous chemical exposure was provided.
39	CA 8.2.8, CP 10.2.3	de Campos Oliveira R. et al.	2021	Effect of herbicides based on glyphosate on the photosynthesis of green macroalgae in tropical lotic environments	FUNDAMENTAL AND APPLIED LIMNOLOGY, (2021), Vol. 195, No. 2, pp. 85-93	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for algae (it cannot be integrated into the risk assessment scheme because measured variables and endpoints are not in line with the guidance), but its findings can be used as supportive information in a broader discussion of the effects of glyphosate on aquatic organisms (specifically macroalgae). The species tested are widely distributed and frequently reported as representatives of Chlorophyta in lotic macroalgal communities in Brazil. The study is considered reliable with restrictions because it lacks of analytical verifications of the tested item in the test medium during the exposure phase and because the specimens used for the test come from natural sources and no evidence was provided that they were not previously exposed to pesticides.
40	CA 8.7, CP 10.7	Lorch M. et al.	2021	Repeated annual application of glyphosate reduces the abundance and alters the community structure of soil culturable pseudomonads in a temperate grassland	Agriculture, ecosystems & environment, (2021), Vol. 319, Article No. 107503	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on soil microorganisms. The part of the study conducted in the field is not relevant, because it was conducted in a humid mesophytic meadow of a commercial farm located in Argentina. This is not relatable to the EU risk assessment, because

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						the conditions are not representative. The part of the study conducted in the greenhouse is relevant, but it was conducted at only one rate (the same for both pure glyphosate and the GBH). The concentration of glyphosate in the soil was not analyzed. The study is considered as reliable with restrictions because no analytical verifications of the concentration of glyphosate in soil samples were conducted. In addition, the characterization of the soil was not provided (just texture) and the application volume was not reported.
41	CP 10.3.1.4	Hernandez J. et al.	2021	Sublethal doses of glyphosate impair olfactory memory retention, but not learning in the honey bee (<i>Apis mellifera scutellata</i>)	JOURNAL OF INSECT CONSERVATION, (2021), Vol. 25, No. 4, pp. 683-694	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for bees (it cannot be integrated into the risk assessment scheme), but its findings can be used as supportive information (olfactory learning and memory) in a broader discussion on the sub-lethal effects of glyphosate on bees. The study is considered as reliable with restrictions because it is uncertain whether the bees have been previously exposed to pesticides, because no analytical verifications of the stock solution were conducted and because the test temperature (20°C) is low for honey bees (should have been ca. 33°C). In addition, only 2 concentration (0.375 and 1.5 µg/bee) were tested (under both acute and repeated exposure conditions).
42	CP 10.5	Jezierska-Tys S. et al.	2021	Microbiological Nitrogen Transformations in Soil Treated with Pesticides and Their Impact on Soil Greenhouse Gas Emissions	AGRICULTURE-BASEL, (2021), Vol. 11, No. 8.	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for soil microorganisms (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on soil nitrogen transformation (nitrification) under realistic field conditions. The study is considered as not reliable because the record of the previous exposure to other chemicals in the field where the soil samples were taken is not reported and no analytical verifications of the concentration of glyphosate in soil samples were conducted. It is therefore not possible to link univocally the glyphosate application with the observed effects in soil nitrification. In addition, the incubation conditions of the soil were not reported. Furthermore, the test item was poorly described. Precipitations regime between application and soil sampling was not described.

Table 35: Relevant but supplementary (category B) articles after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
35	Akyol N. H. et al.	CA 7.1.4.1	2021	Comparison of sorption and solute transport behaviour of several herbicides in an alkaline agricultural soil	International Journal of Environmental Analytical Chemistry (2021): Ahead of Print	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The objective of this study was to quantify sorption and solute transport of glyphosate in soil column experiments with an alkaline agricultural soil from Turkey. The adsorption coefficient (Kd) for glyphosate was estimated to be 2.14 L/kg. The soil sampling procedure (e.g. depth and timing), soil storage and pesticide history of the soils are not reported. Soil columns (10-cm long by 2-cm diameter) were smaller than required by the guideline (at least 4 cm and a minimum height of 35 cm). The experiments were conducted in saturated columns with flow from bottom to top at a rate of 0.7 mL/min. Test concentrations were high with 20 to 100 mg/L. Only the column effluent was analysed, soil segments were not analysed. Sample analysis was performed using an UV spectrometer with a detection limit of 0.1 mg/L.
18	Almeida L. L. et al.	CA 5.8.2	2021	Protective effect of melatonin against herbicides-induced hepatotoxicity in rats.	Toxicology Research, (2021), Vol. 10, No. 1, pp. 1-10	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The article provides supplementary information on the ability of melatonin to ameliorate toxic effects of glyphosate on the liver. No information on feed and housing conditions, content of test material not available. Several effects observed are from the mixture of Paraquat with Roundup® (i.e. mixture toxicity). There is only one dose/no dose-response relationship. Finally, there is no HCD reported and no method of analysis.
32	Baudry J. et al.	CA 6.9	2021	Estimated dietary exposure to pesticide residues based on organic and conventional data in omnivores, pesco-vegetarians, vegetarians and vegans	Food and Chemical Toxicology, (2021), Vol. 153, Article No. 112179	The article has been classified as relevant by full text - Category B and reliable without restrictions: This is a dietary risk assessment study to investigate uptake of reissues (incl glyphosate) by different population groups, including omnivores, pesco-vegetarians, vegetarians and vegans, with further distinction between intake of conventional or organic food source. Highest glyphosate intakes of glyphosate were calculated for vegans consuming conventional food (0.0264 µg/kg bw/day), with highest contributor legume vegetables. The study uses data from the NutriNet-Santé study (consumption survey 2013) and pesticide residue data from Chemisches und Veterinäruntersuchungsamt (CVUA) Stuttgart database. The study shows no risks to all consumer groups from glyphosate residues.
26	Bergero M. et al.	CA 6.10	2021	Agrochemical Contamination of Honey and Bee Bread Collected in the Piedmont Region, Italy	Environments, (2021), Vol. 8, No. 7	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Monitoring data from Piedmont (Italy) on pesticides in bee bread and honey (sampling from 4 apiaries). Glyphosate was the most abundant

						chemical found in bee bread and honey samples, with levels of <10-542 and 10-34 µg/kg, respectively. Analysis of glyphosate in honey was done according to QuPpe M 1.3 method, however no method validation data are provided in the publication.
13	Bicca Ferreira D. et al.	CA 5.7	2021	A subchronic low-dose exposure of a glyphosate-based herbicide induces depressive and anxious-like behavior in mice: quercetin therapeutic approach.	Environmental science and pollution research international, (2021), Vol. 28, pp. 67394-67403	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on the effect of a glyphosate formulation on the central nervous system and the therapeutic effect of the flavonoid quercetin. Only one dose/no dose-response relationship. No HCD reported and no method of analysis.
19	Boffetta P. et al.	CA 5.9	2021	Exposure to glyphosate and risk of non-Hodgkin lymphoma: an updated meta-analysis.	La Medicina del lavoro, (2021), Vol. 112, No. 3, pp. 194-199.	The article has been classified as relevant by full text - Category B and not reliable for the following reason: This is a review article, not primary research on a study population. The meta-analysis approach was standard. However, meta-analysis cannot correct for the validity limitations in the included studies, which precludes calculating a valid assessment of the possible relationship between glyphosate and non-Hodgkin's lymphoma. Limited in several of the included case control studies. Especially limited in Leon et al. (2019) where the exposure assessment was based on crops farmed for 84% of the pooled cohort of 316,270. The indirect methodology made it impossible to discriminate those not exposed to specific pesticides or to know with reasonable certainty those exposed to specific pesticides. In addition, date of first exposure would be unknown for crops originally treated with other pesticides and subsequently treated with glyphosate. In fact, it seems likely that the majority of those judged to have been exposed to most specific pesticides were, in fact, not exposed when there were several pesticides registered for use on specific crops. Cases were more likely to participate than controls in several of the case control studies included in the meta-analysis. There was a substantial amount of second-hand information in several of the case control studies. The meta-analysis was not able to address biases in the included studies, especially recall bias, selection bias, and residual confounding.
12	Cattani D. et al.	CA 5.6, CA 5.7	2021	Perinatal exposure to a glyphosate-based herbicide causes dysregulation of dynorphins and an increase of neural precursor cells in the brain of adult male rats.	Toxicology, (2021), Vol. 461, Article No. 152922	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on the effect of a glyphosate formulation on neurodevelopmental processes associated to long-term brain changes. Only one dose/no dose-response relationship. No HCD reported and no method of analysis.
39	de Campos Oliveira R. et al.	CA 8.2.8, CP 10.2.3	2021	Effect of herbicides based on glyphosate on the photosynthesis of green macroalgae in tropical lotic environments	FUNDAMENTAL AND APPLIED LIMNOLOGY, (2021), Vol. 195, No. 2, pp. 85-93	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for algae (it cannot be integrated into the risk assessment scheme because measured variables and endpoints are not in line with the guidance), but its findings can be used as supportive information in a broader discussion of the

						effects of glyphosate on aquatic organisms (specifically macroalgae). The species tested are widely distributed and frequently reported as representatives of Chlorophyta in lotic macroalgal communities in Brazil. The study is considered reliable with restrictions because it lacks of analytical verifications of the tested item in the test medium during the exposure phase and because the specimens used for the test come from natural sources and no evidence was provided that they were not previously exposed to pesticides.
29	Edge C. B. et al.	CA 6.3	2021	The Persistence of Glyphosate in Vegetation One Year after Application	FORESTS, (2021), Vol. 12, No. 5.	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study describes two experiments conducted in Canada, where glyphosate was applied aerially at rates of 1.35-1.8 kg a.s./ha to forestry areas. Samples of vegetation browsed by deer, moose and bear were collected from sprayed and non-sprayed adjacent blocks (down-wind), and analysed for residues of glyphosate and AMPA. Overall, the studies demonstrate that trace levels of glyphosate persist in vegetation for up to one year after application, however, observed concentrations are unlikely to pose risk to wildlife. Analytical work was done at the Agriculture and Food Laboratory at the University of Guelph by means of LC-MS/MS, however no method description and validation data are provided.
37	Fernandes B. et al.	CA 7.5	2020	Levels of glyphosate in vineyard soils and potential adverse effects to the environment.	IOBC/WPRS Bulletin, (2020), No. 154, pp. 129-132	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. The levels of glyphosate and AMPA were monitored in two different vineyards from the Douro Demarcated Region (Portugal) over one year from February 2018 to January 2019. The highest concentrations of glyphosate were observed in February (median value of 2.0 mg/kg). The exact location of the vineyards and the weather conditions are not reported. The application method and rate of the glyphosate formulation as well as the formulation type are not described. No information on soil sampling procedure, depth, sample storage and extraction method is provided. The analytical method is not described with sufficient details and was not validated. No individual concentrations are reported, but only median values and they cannot be assigned to a geographic area.
36	Giuliano S. et al.	CA 7.1.4.3	2021	Reducing herbicide use and leaching in agronomically performant maize-based cropping systems: An 8-year study.	The Science of the total environment, (2021), Vol. 788, Article No. 147695	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . An 8-year field leaching experiment was carried out at the Domaine de Lamothe - INP PURPAN, Garonne Plain, south-western France (43.506N, 1.237E) from 2011 to 2018. Different cropping systems were compared. Glyphosate and AMPA were detected in less than 50% of the samples and had very low frequencies of leachates with concentration above 1 µg/L (respectively 5% and 0%). No information on the test substance (formulation, purity), the exact application time and the application method is given. Only leachate but no soil samples were analysed. The volume and sampling time of the leachate is not reported. Furthermore, only maximum concentrations of glyphosate and AMPA were reported.

						It is not reported when (year, season) the maximum concentrations were observed and thus it cannot be connected to glyphosate application or climatic conditions.
20	He Xiu et al.	CA 5.9	2021	The relationship between pesticide exposure during critical neurodevelopment and autism spectrum disorder: A narrative review.	Environmental research, (2021), Vol. 203, Article No. 111902	The article has been classified as relevant by full text - Category B and not reliable for the following reason: This is a narrative review article, not an epidemiologic study. There is no study design or study population per se. The two glyphosate epidemiology studies cited in this review involve very unlikely exposure scenarios. One study correlated increasing glyphosate use on crops with increases in the general population rate of autism. The second study defined exposure as proximity of the mother's residence on the birth certificate within a 2,000-meter radius of a glyphosate application recorded in the California Pesticide Use Reporting system. Even assuming the mother was home at the address on the birth certificate at the time of application, no one has ever demonstrated glyphosate exposure at appreciable distances from an application. There was no consideration of personal confounding factors in one study and very limited consideration in the other study. The assessment of autism risk from glyphosate exposure is based on two studies with very unlikely exposure scenarios. Therefore, this review does not provide reliable evidence about a possible association between glyphosate and autism.
41	Hernandez J. et al.	CP 10.3.1.4	2021	Sublethal doses of glyphosate impair olfactory memory retention, but not learning in the honey bee (<i>Apis mellifera scutellata</i>)	JOURNAL OF INSECT CONSERVATION, (2021), Vol. 25, No. 4, pp. 683-694	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for bees (it cannot be integrated into the risk assessment scheme), but its findings can be used as supportive information (olfactory learning and memory) in a broader discussion on the sub-lethal effects of glyphosate on bees. The study is considered as reliable with restrictions because it is uncertain whether the bees have been previously exposed to pesticides, because no analytical verifications of the stock solution were conducted and because the test temperature (20°C) is low for honey bees (should have been ca. 33°C). In addition, only 2 concentration (0.375 and 1.5 µg/bee) were tested (under both acute and repeated exposure conditions).
42	Jezierska-Tys S. et al.	CP 10.5	2021	Microbiological Nitrogen Transformations in Soil Treated with Pesticides and Their Impact on Soil Greenhouse Gas Emissions	AGRICULTURE-BASEL, (2021), Vol. 11, No. 8.	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for soil microorganisms (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on soil nitrogen transformation (nitrification) under realistic field conditions. The study is considered as not reliable because the record of the previous exposure to other chemicals in the field where the soil samples were taken is not reported and no analytical verifications of the concentration of glyphosate in soil samples were conducted. It is

						therefore not possible to link univocally the glyphosate application with the observed effects in soil nitrification. In addition, the incubation conditions of the soil were not reported. Furthermore, the test item was poorly described. Precipitations regime between application and soil sampling was not described.
30	Jin Shan et al.	CA 6.3	2021	Analysis on pesticide residues level in dry tea materials of Chenxiang Tieguanyin and the preliminary studies on the degradation of pesticide residues.	Journal of Chinese Institute of Food Science and Technology, (2021), Vol. 21, pp. 291-29	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: Monitoring data from China on pesticides in oolong tea (Chenxiang Tieguanyin, 89 raw materials analysed). Glyphosate was detected in 13 samples at levels of 0.07-0.79 mg/kg, i.e. below EU and China MRL (2 and 1 mg/kg, respectively). Analytical work was done at the Fujian Inspection and Research Institute for Product Quality by means of LC MS/MS (according to Chinese Standard GB/T 23204-2008), however no method validation data are provided.
27	Krogh U. et al.	CA 6.10	2021	Performance and mineral status of weaning pigs fed diets with different levels of glyphosate and tryptophan.	Livestock Science, (2021), Vol. 252, Article No. 104681	The article has been classified as relevant by full text - Category B and reliable without restrictions: This is an experimental study to investigate effects of glyphosate on performance and mineral status of weaning pigs (weight, feed intake and faeces score; intestine digesta, blood and urine analysis). Pigs were fed with weaning diet containing various concentrations (20 and 200 mg/kg) of glyphosate, at the highest concentration with and without addition of crystalline tryptophan. Neither feed intake, growth rate, serum mineral concentrations nor faeces score were significantly affected by level or source (pure glyphosate salt vs GBH) of the dietary glyphosate. Well described experimental study on the effect of glyphosate on the performance and mineral status of weaning pigs.
21	Lesueur C. et al.	CA 5.9	2021	Urinary glyphosate concentration in pregnant women in relation to length of gestation.	Environmental research, (2021), Vol. 203, Article No. 111811	The article has been classified as relevant by full text - Category B and not reliable for the following reason: This study was not designed to study glyphosate per se. The authors took advantage of an ongoing study (TIDES) that had collected a 2nd trimester urine sample from pregnant women to evaluate a possible relationship between glyphosate (and AMPA) in urine and length of gestation and pre-term birth. Had the study been designed for glyphosate per se, it is unlikely that a single urine sample would have been planned as the basis for the analysis and other potential environmental exposures in urine or blood would have been assessed. The authors took the opportunity to generate some data about glyphosate (and AMPA) and length of gestation from a study that was designed for other purposes. Adapting data from an ongoing study is efficient and it can be informative when the data collection from the ongoing study matches what would have been collected for a high-quality study of the question at hand. In most instances, however, it results in a study that has important limitations. It is debatable whether pregnant women who come to the 4 university hospitals in the TIDES study is an optimum population for the study of glyphosate and length of gestation. Urine

					concentrations for these women equate to a glyphosate internal dose that is extremely low – 0.0008 mg/kg or 0.2% of the European ADI – raising the issue of biological implausibility. Also, taking the analysis at face value requires the strong assumption that a single 2nd trimester urine sample reflects the amount of exposure during the etiologically meaningful time period for affecting length of gestation. The authors did not provide a justification for the adequacy of a single 2nd trimester urine sample. It is also worth noting that there are literally hundreds of chemicals that could have been measured in urine (or blood) to study length of gestation. One normally would not choose to focus on such low levels of glyphosate over other internalized chemicals for the study participants and it can be argued that some of those other exposures would have been important to consider in the analyses. The results of the authors' many analyses differed depending on the specific comparisons being made. Median exposure levels did not differ when outcomes were dichotomized as pre and full term. For the overall population, gestational age was not related to glyphosate values (hazard ratio (HR) 1.08, 95% CI 0.91, 1.29), but there was a weak to moderate association when the analysis was restricted to births that were not medically induced (HR 1.31, 95% CI 1.00, 1.71). The authors noted that 41% of births were medically induced, so presumably the HR for those women was somewhat less than 1.0. Likewise, when length of gestation was dichotomized as pre and full term, the odds ratio (OR) for glyphosate for all births was 1.19 (95% CI 0.86, 1.64) and the OR was 1.54 (95% CI 0.97, 2.57) when restricted to births that were not medically induced. Again, it seems likely that the measure of association was somewhat less than 1.0 for the women who were medically induced. On balance, the results did not show a consistent relationship for glyphosate and length of gestation or pre-term birth and the interpretation of the results for those women who were medically induced is uncertain. The various analyses controlled for relatively few personal factors and no environmental factors. One can only speculate whether the results may have residual confounding. In conclusion, the results have very limited relevance for a glyphosate risk assessment. First, it's unclear whether the urine sampling is a valid representation of the internal dose at a relevant time point for the health outcome under study. Second, the range of internal doses for study participants was so low as to suggest biological implausibility. Third, the findings were based on small numbers and varied across a range of analyses, some showing no association and some showing a weak to moderate association. Lastly, there was limited consideration of confounding factors, both personal and environmental.

38	Lopes A. et al.	CA 8.1.4	2021	Evaluation of the genotoxic, mutagenic, and histopathological hepatic effects of polyoxyethylene amine (POEA) and glyphosate on <i>Dendropsophus minutus</i> tadpoles.	Environmental pollution, (2021), Vol. 289, Article No. 117911	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for amphibians (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on vertebrate wildlife. A quantitative endpoint can be established but based on effects at cellular/mollecular level (genotoxicity and mutagenicity). For the histopathological effects that are relevant for the risk assessment, only a qualitative evaluation was conducted. The study cannot be considered as fully reliable because no analytical verification of the test concentrations in water was conducted. In addition, tested individuals provide from samples from a permanent body of water in Brazil and no record of previous chemical exposure was provided.
40	Lorch M. et al.	CA 8.7, CP 10.7	2021	Repeated annual application of glyphosate reduces the abundance and alters the community structure of soil culturable pseudomonads in a temperate grassland	Agriculture, ecosystems & environment, (2021), Vol. 319, Article No. 107503	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on soil microorganisms. The part of the study conducted in the field is not relevant, because it was conducted in a humid mesophytic meadow of a commercial farm located in Argentina. This is not relatable to the EU risk assessment, because the conditions are not representative. The part of the study conducted in the greenhouse is relevant, but it was conducted at only one rate (the same for both pure glyphosate and the GBH). The concentration of glyphosate in the soil was not analyzed. The study is considered as reliable with restrictions because no analytical verifications of the concentration of glyphosate in soil samples were conducted. In addition, the characterization of the soil was not provided (just texture) and the application volume was not reported.
31	Malone M.	CA 6.3	2021	Seeking justice, eating toxics: overlooked contaminants in urban community gardens	AGRICULTURE AND HUMAN VALUES, (2021) https://doi.org/10.1007/s10460-021-10236-8	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This is a kind of monitoring study in urban community gardens (UCGs), where soil from nine UCGs around Seattle were sampled and analysed for As, Pb, glyphosate and AMPA, and total petroleum hydrocarbons (TPH). Glyphosate and AMPA were found preliminary at two sites. Maximum levels of glyphosate and AMPA were 0.108 and 0.613 mg/kg, respectively, with highest median values of 0.027 and 0.163 mg/kg. Analytical work was done by HRI Laboratories in Iowa by means of LC MS/MS, however no method validation data are provided for soil analyses.
11	Nagy K. et al.	CA 5.4.1	2021	Micronucleus Formation Induced by Glyphosate and Glyphosate-Based Herbicides in	Frontiers in public health, (2021) Vol. 9, Article No. 639143	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability . The article provides information on the genotoxicity profile of

				Human Peripheral White Blood Cells.		glyphosate. Glyphosate a.s. and 3 GBHs were tested. Roundup Mega containing ethoxylated etheralkylamine), Glyfos containing polyethoxylated tallow amine and Fozat containing a wetting agent C12-14-alkyldimethyl betaine. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure (e.g. ethoxylated etheralkylamine), are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the fact that the formulations tested contain ethoxylated etheralkylamine (similar chemical structure to POEA), POEA and betaine (not present in the AIR5 glyphosate representative formulation), the article is not considered relevant for use in risk assessment for the formulations as the effects observed cannot be attributed to glyphosate a.s. The article nevertheless presents relevance with regard to pure glyphosate. The study did not fully adhere to OECD 487, including, the purity of glyphosate is missing, no HCD available and no concurrent positive controls. Following AIR2 approval, however, all glyphosate formulations were required to be tested for clastogenicity using OECD 487 for re-approval under Article 43, and the quality of reporting in these studies should be compared with the results presented within this paper.
22	Odutola M. K. et al.	CA 5.9	2021	A systematic review and meta-analysis of occupational exposures and risk of follicular lymphoma	Environmental Research, (2021), Vol. 197, Article No. 110887	The article has been classified as relevant by full text - Category B and not reliable for the following reason: This is a review article of the literature for numerous exposures, including glyphosate, and follicular lymphoma. It is not primary data. The authors used standard meta-analysis routines. However, they had no ability to correct for limitations in the original studies. It seems that the authors had only a superficial knowledge of the details and quality limitations of many of the glyphosate studies because they concluded that the risk of bias was low (viz., systematic error) – other than the small number of cases (viz., random error). Most previous reviewers of glyphosate studies considered the risk of bias to be high for most of the studies.
14	Pu Y. et al.	CA 5.8	2021	Autism-like Behaviors in Male Juvenile Offspring after Maternal Glyphosate Exposure.	Clinical psychopharmacology and neuroscience : the official scientific journal of the Korean College of Neuropsychopharmacology,	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. The aim of the study was to investigate whether maternal exposure of pure glyphosate could cause ASD-like behaviours in juvenile offspring. Water or 0.098% glyphosate (980 mg/L) was administered as drinking water from E5 to P21 (weaning). This level of glyphosate

					(202), Vol. 19, No. 3, pp. 554-55	acid in water has a very low pH of approximately 2.3, which may confound the results of the test due to either pH effects on the gastrointestinal tract, or reduced water consumption in the test group causing some degree of dehydration. Male offspring showed ASD-like behavioural abnormalities (i.e., increasing grooming behaviour and social interaction deficit) after maternal exposure of glyphosate. Purity of the active substance missing. Only one dose, no dose-response relationship established, number of animals/group is unclear. Dosing level in water is at least several orders of magnitude higher than worst case human dietary exposures and pH of dose group water is very low. Key parameters of water and food consumption not reported. No record of in-life clinical observations. No HCD reported and no method of analysis. No positive controls employed to verify the validity or accuracy of the method and therefore the relevance to human health assessments is at best tenuous.
15	Qiu S. et al.	CA 5.8	2021	Response of the nuclear xenobiotic receptors to alleviate glyphosate-based herbicide-induced nephrotoxicity in weaned piglets.	Environmental science and pollution research international, (2021), Vol. 29, pp. 2707-2717	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article provides supplementary information on the effect of Roundup on piglet kidneys. The study also investigates the role of kidney nuclear xenobiotic receptors. The piglet is not a model validated in the toxicological studies in the EU evaluations, however the information can still be used as supplementary. No dose-effect relationship. No HCD reported and no method of analysis.
23	Silver M. K. et al.	CA 5.9	2021	Prenatal Exposure to Glyphosate and Its Environmental Degradate, Aminomethylphosphonic Acid (AMPA), and Preterm Birth: A Nested Case-Control Study in the PROTECT Cohort (Puerto Rico).	Environmental health perspectives, (2021), Vol. 129, No. 5, Article No 57011.	The article has been classified as relevant by full text - Category B and not reliable for the following reason: The authors took the opportunity to generate some data about glyphosate (and AMPA) and preterm birth from a cohort (PROTECT) study that was designed for other purposes than glyphosate per se. Adapting data from an ongoing study is efficient and it can be informative when the data collection from the ongoing study matches what would have been collected during a high-quality study of the question at hand. In most instances, however, the result is studies that have important limitations in study size or necessary information on personal factors and confounders. It is debatable whether pregnant women in the PROTECT cohort, patients at two university hospitals and 5 nearby clinics in northern Puerto Rico, are an optimum population for the study of glyphosate and preterm birth. Urine concentrations for these women equate to a glyphosate internal dose that is extremely low – a few percent or less of the European ADI – raising the issue of biological implausibility. Also, taking the analysis at face value requires the strong assumption that one or two 2nd trimester urine sample(s) reflects the amount of exposure during the etiologically meaningful time period for affecting length of gestation. The authors did not provide a justification for the adequacy of a single or two 2nd trimester urine sample(s). It is also worth noting that there are literally hundreds of chemicals that could have been measured in urine (or blood) to study length of gestation. One

						normally would not choose to focus on such low levels of glyphosate over other possible internalized chemicals for the study participants and it can be argued that some of those other exposures would have been important to consider in the analyses. This was noted as a limitation by the authors. The results of the authors' various analyses differed depending on the specific comparison being made. Analyses based on the visit 3 urine samples showed a weak to moderate relationship between glyphosate and pre-term birth, whereas analyses based on the visit 1 urine sample or the average of the visit 1 and 3 urine samples showed near null odds ratios. On balance, the results did not show a consistent relationship between urinary concentration of glyphosate and pre-term birth. The various analyses controlled for relatively few personal factors and environmental factors. One can only speculate whether the results may have residual confounding. In conclusion, the results of this study have very limited relevance for a glyphosate risk assessment. First, it's unclear whether the urine sampling is a valid representation of the internal dose at a relevant time point for the health outcome under study. Second, the range of internal doses for study participants was so low as to suggest biological implausibility. Third, the findings are based on small numbers of cases and varied across a range of analyses, some showing no association and some showing a weak to moderate association. Lastly, there was limited consideration of confounding factors.
16	Sopko B. et al.	CA 5.8	2021	Glyphosate Interaction with eEF1 α 1 Indicates Altered Protein Synthesis: Evidence for Reduced Spermatogenesis and Cytostatic Effect.	ACS omega, (2021), Vol. 6, No. 23, pp. 14848-14857	The article has been classified as relevant by full text and downgraded to Category B due to its non-reliability. The paper is a review of the literature that provides information on the mode of action of glyphosate via interaction with eEF1α1 pathway and spermatogenesis and cytostatic effects through a combination of in silico, in vitro and in vivo information. The aim of the study was to evaluate a previously unknown mechanism to explain a presumption that glyphosate exposure can negatively affect animals, including humans. Computer modeling suggested a probable interaction between glyphosate and eukaryotic translation elongation factor 1 subunit alpha 1 (eEF1α1), which was said to be confirmed by microcalorimetry, however, details on the calorimetry method are lacking, including concentration(s) of glyphosate interrogated. Only restricted, nondisrupted spermatogenesis was reported in rats after 100 days (i.e. subchronic, not chronic as reported) glyphosate treatments (0.7 and 7 mg/L ad libitum in drinking water). Although the method notes water consumption was monitored, neither water consumption or feed intake were reported. It is important to note, glyphosate is acidic and dose groups drinking water would be a much lower pH than the control group. Only two dose groups were implemented. The results are not consistent with a number of multigenerational rat reproductive studies with doses up to orders of magnitude higher. Cytostatic and antiproliferative effects of

						glyphosate in GC-1 and SUP-B15 cells were indicated. The meta-analysis of public health data suggested a possible effect of glyphosate use on sperm count, but this is not consistent with reporting in with epidemiology studies or multiple toxicology reproductive studies. Information on purity missing for the pure glyphosate. No HCD. Numerous deficiencies in the in vivo portion and significant underlying assumption in the in silico and meta-analysis.
28	Sorensen M. T. et al.	CA 6.10	2021	Feed residues of glyphosate - potential consequences for livestock health and productivity.	Animal, (2021), Vol. 15, No. 1	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This is a literature review report on potential detrimental effects of glyphosate affect livestock gut microbiota and/or mineral status potentially with derived unfavourable effects on animal health and productivity. Some in vitro growth experiments were conducted with bacteria. Some differences were detected regarding the sensitivity of bacterial growth to glyphosate. The in vitro bacterial growth assays can be considered acceptable. However the new experimental data are limited and provide little additional information to existing studies (also in vivo studies) to this topic.
17	Truzzi F. et al.	CA 5.8	2021	Comparative Evaluation of the Cytotoxicity of Glyphosate-Based Herbicides and Glycine in L929 and Caco2 Cells.	Frontiers in public health, (2021) Vol. 9, Article No. 643898	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: This article provides supplementary information on the cytotoxicity of glyphosate but does not alter the risk assessment. No positive control, no metabolic activation. No HCD.
33	Vicini J. L. et al.	CA 6.9	2021	Residues of glyphosate in food and dietary exposure.	Comprehensive reviews in food science and food safety, (2021): Ahead of Print	The article has been classified as relevant by full text - Category B and reliable without restrictions: This is a literature review article with focus on 1) analytical methods for glyphosate and AMPA, 2) MRL and monitoring data (market surveys) and 3) dietary risk assessment. It reflects a well written summary of available knowledge and regulatory requirements/assessments. Scientifically solid overall assessment of glyphosate consumer risk from glyphosate and AMPA.
34	Wang Y. et al.	CA 6.9	2021	Establishment of a HPLC-MS/MS Detection Method for Glyphosate, Glufosinate-Ammonium, and Aminomethyl Phosphoric Acid in Tea and Its Use for Risk Exposure Assessment.	Journal of agricultural and food chemistry, (2021), Vol. 69, No. 28, pp. 7969-7978	The article has been classified as relevant by full text - Category B and reliable with restrictions for the following reason: The article describes 1) development and optimisation of an analytical method for the determination of glyphosate, AMPA and glufosinate-ammonium, 2) monitoring of tea samples (n = 780) from China, and 3) risk assessment (deterministic and probabilistic) from consumption of teas. The results showed that exposure to PMG, GLU and AMPA caused by drinking tea beverages poses no significant risk to human health. Regarding analytical procedures, it is stated that LOQ for Gly and AMPA was 0.3 mg/kg (derived from calibration standards); however the lowest validated concentration was 1.0 mg/kg.
24	Yokoyama S. et al.	CA 5.9	2021	Transient glyphosate encephalopathy due to a suicide attempt.	Neuropsychopharmacology reports, (2021), Vol. 41, No. 3, pp. 444-447	The article has been classified as relevant by full text - Category B for the following reason: This is a case report of a man who developed a delayed encephalopathy characterized by confusion seizure activity and decreased perfusion of his left cerebral

						hemisphere on SPECT 3 days after a suicidal ingestion of formulated glyphosate. On initial presentation the patient was asymptomatic, underwent gastric lavage, which is not indicated in an asymptomatic patient, and was admitted to the psychiatric floor. 3 days later he was noted to have a delirium for which he was treated with mirtazapine. This was discontinued when symptoms grew progressively worse. The authors speculate that the cause of the encephalopathy was glyphosate. This is highly unlikely as glyphosate is not neurotoxic, nor does it cause vascular constriction. A unilateral perfusion deficit is very uncommon in a toxin induced encephalopathy. This case is much more consistent with acute alcohol withdrawal, which is a slow onset syndrome that takes 2-3 days to develop, is characterized by delirium and seizures, reversible vasogenic edema in the hippocampal regions. This presentation is not consistent with glyphosate overdoses and because of the suicidal ingestion should not impact regulatory decisions.
25	Zhang C. Q. et al.	CA 5.9	2021	A case of allergic cutaneous vasculitis caused by glyphosate.	Chinese journal of industrial hygiene and occupational diseases, (2021), Vol. 39, No. 6, pp. 467-468	The article has been classified as relevant by full text - Category B for the following reason: This is a case report of a man who developed purpuric skin lesions involving the palms and leukocytoclastic vasculitis after exposure to an agrichemical that was reported to be glyphosate. His symptoms improved with steroid therapy, recurred upon reexposure 2 times and resolved with steroid treatment. The article claims that the chemistry involved was glyphosate despite the fact that there was no confirmation of exposure through any definitive identification of the product, urine or blood testing for the presence of glyphosate. Glyphosate is not a sensitizer, nor does it cause immune complex deposition in the vasculature. While the patient was worked up for several diseases associated with leukocytoclastic vasculitis, they left out several very prominent infectious etiologies that are much more commonly associated with palmar rashes and vasculitides. There is no described mechanism in the literature for this constellation of symptoms and no confirmation that the patient was exposed to glyphosate.

Table 36: Articles of unclear relevance (category C) after detailed assessment: sorted by data requirement(s)

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
43	CA 5.6	Kafshgiri Kaboli S. et al.	2021	Glyphosate effects on the female reproductive systems: a systematic review.	Reviews on environmental health, (2021): Ahead of print	The relevance of this article is unclear (Category C) for the following reason: The paper is a review of the literature that provides information on the effect of glyphosate formulations on the female reproductive system. The review does not provide all the necessary information, especially on the test material used, but refers to the original studies / there are no information on the formulation used and if they are similar to the representative formulation in EU / formulation accepted in EU.
44	CA 5.8	Maddalon A. et al.	2021	Glyphosate-based herbicides: Evidence of immune-endocrine alteration.	Toxicology, (2021), Vol. 459, Article No. 152851	The relevance of this article is unclear (Category C) for the following reason: This paper is a review of published epidemiological studies and studies performed in vitro and in vivo in animals, the possible association between glyphosate based herbicides and immune-endocrine alterations. Overall, the authors could not conclude on the immune-endocrine alteration reported in the analysed publications and stated that further studies are required. No information was provided on the criteria used to select the publications and to conclude on their reliability. Most of the experiments were performed with glyphosate formulations and only few of them with pure glyphosate. However, the details on the test items used are not available for all the studies included in this review - some trade names are provided but not for all the studies. Moreover, the co-formulant POEA, is mentioned and likely to be included in some of the formulations. Lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.
45	CA 5.8	Milesi M. M. et al.	2021	Glyphosate Herbicide: Reproductive Outcomes and Multigenerational Effects.	Frontiers in endocrinology, (2021), Vol. 12, Article No. 672532	The relevance of this article is unclear (Category C) for the following reason: This paper is a review of the literature that provides information on the effects of glyphosate and glyphosate based formulations on reproductive health and endocrine functions. Overall, there is an absence of criteria for selecting the publications and their relevance/acceptability. Analyses of the selected publications highlighted the importance and need of further evaluating the toxicology of glyphosate and its formulations to the reproductive performance. Most of the experiments were performed with glyphosate formulations and only few of them with pure glyphosate. However, the details on the test items used are not available for all the studies included in this review - some trade names are provided but not for all the studies. Moreover, the co-formulant POEA, is mentioned and likely to be included in some of the formulations. Lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
46	CA 5.8	Mohammadi K. et al.	2021	A systematic review and meta-analysis of the impacts of glyphosate on the reproductive hormones.	Environmental science and pollution research international, (2021) doi: 10.1007/s11356-021-16145-x	The relevance of this article is unclear (Category C) for the following reason: The paper is a review of the literature and meta-analysis that provides information on the effect of glyphosate on the reproductive hormones. Among the initial 279 records identified, 54 articles were retrieved for full-text evaluation, and then only eight studies were eligible for this systematic review and meta-analysis. There are some experiences performed with pure glyphosate, however the details on the test items used are not available for all the studies included in this review. Overall, the outcome of this review based on the qualified studies could suggest a possible effect of glyphosate and/or glyphosate based herbicides on the health reproductive system due to a tendency in decreasing testosterone and follicle-stimulating hormone (FLH). However, as indicated by the authors this review may be affected by a series of limitations among which the high heterogeneity within the hormonal measurements and the small sample size of the final eligible studies for this review. Lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.
47	CA 5.8	Rossetti M. F. et al.	2021	Epigenetic Changes Associated With Exposure to Glyphosate-Based Herbicides in Mammals.	Frontiers in endocrinology, (2021), Vol. 12, Article No. 671991	The relevance of this article is unclear (Category C) for the following reason: This paper is a review of the literature that provides information on epigenetic changes associated with exposure to glyphosate and glyphosate formulations. However, the details on the test items used are not available for all the studies included in this review.
48	CA 5.8	Weisenburger D. D. et al.	2021	A Review and Update with Perspective of Evidence that the Herbicide Glyphosate (Roundup) is a Cause of Non-Hodgkin Lymphoma.	Clinical lymphoma, myeloma & leukemia, (2021), Vol. 21, No. 9, pp. 621-630	The relevance of this article is unclear (Category C) for the following reason: This paper is a review of the literature that provides information on exposure to glyphosate formulations and non-hodgkin lymphoma. However, the details on the formulation used are not available for all the studies included in this review.
49	CA 8.2.5, CP 10.2.2	Song Y. et al.	2020	protective effects of melatonin on survival, immune response, digestive enzymes activities and intestinal microbiota diversity in Chinese mitten crab (<i>Eriocheir sinensis</i>) exposed to glyphosate	Comparative biochemistry and physiology: CBP (2020), Vol. 238, Article No. 108845	The relevance of this article is unclear (Category C) for the following reason: The only information from this study that is relevant for the risk assessment is the effect of glyphosate on survival rate. The rest of the investigated parameters are all based on findings at cellular/mollecular level and therefore not relevant. Glyphosate has been tested at only one concentration (48.945 mg/L) and this concentrations was calculated as the 96 h LC50 value in a previous study. Mortality in this study at that concentration is lower than 50%, but still the relevance of the findings of this study for the risk assessment is not clear. In addition, the test item was not identified (not clear whether it is active substance or a product -and which kind of formulation.)
50	CA 8.4.1, CP 10.4.1	Zaller J. G. et al.	2021	Effects of glyphosate-based herbicides and their active ingredients on earthworms, water infiltration and glyphosate leaching are influenced by soil properties	Environmental Sciences Europe, (2021) Vol. 33, No. 1, Article No. 51	The relevance of this article is unclear (Category C) for the following reason: This is a greenhouse experiment where established weed populations of common amaranth (<i>Amaranthus retroflexus</i>) were sprayed with three glyphosate-based herbicides GBHs (Roundup LB Plus, Roundup PowerFlex, Touchdown Quattro) and their corresponding AIs (salts of glyphosate isopropylammonium, potassium, diammonium) to examine their effects on the activity and physiological biomarkers of the earthworm species <i>Lumbriculus terrestris</i> . The route of exposure

Submission Number	Data requirement (indicated by the corresponding CA / CP data point number)	Author(s)	Year	Title	Source	Justification
						to earthworms (herbicides were sprayed to the plants and not to the soil) is not in line with the EU process and therefore, no relatable endpoint can be established as not direct effects were assessed. Moreover, some of the studied variables are based on a cellular or molecular level and the only information that could be integrated in the EU evaluation is related to the variation in the density and activity of the earthworms 4 weeks after weed control applications. In addition, final conclusions were expressed in terms of GBH or AI and not for every single treatment. Nevertheless, weeds were treated at recommended dosages just as they would be applied to kill weeds before sowing, so the study somehow mimics what really happens to earthworms living in the soil when exposed to glyphosate residues after the weeds in a field are treated before sowing the crop. The soil is natural and glyphosate concentrations in soil and leachate were measured, so the real exposure to earthworms 26 days after GBH/AI applications is known.

Table 37: Articles of unclear relevance (category C) after detailed assessment: sorted by author(s)

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
43	Kafshgiri Kaboli S. et al.	CA 5.6	2021	Glyphosate effects on the female reproductive systems: a systematic review.	Reviews on environmental health, (2021): Ahead of print	The relevance of this article is unclear (Category C) for the following reason: The paper is a review of the literature that provides information on the effect of glyphosate formulations on the female reproductive system. The review does not provide all the necessary information, especially on the test material used, but refers to the original studies / there are no information on the formulation used and if they are similar to the representative formulation in EU / formulation accepted in EU.
44	Maddalon A. et al.	CA 5.8	2021	Glyphosate-based herbicides: Evidence of immune-endocrine alteration.	Toxicology, (2021), Vol. 459, Article No. 152851	The relevance of this article is unclear (Category C) for the following reason: This paper is a review of published epidemiological studies and studies performed in vitro and in vivo in animals, the possible association between glyphosate based herbicides and immune-endocrine alterations. Overall, the authors could not conclude on the immune-endocrine alteration reported in the analysed publications and stated that further studies are required. No information was provided on the criteria used to select the publications and to conclude on their reliability. Most of the experiments were performed with glyphosate formulations and only few of them with pure glyphosate. However, the details on the test items used are not available for all the studies included in this review - some trade names are provided but not for all the studies. Moreover, the co-formulant POEA, is mentioned and likely to be included in some of the formulations. Lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.
45	Milesi M. M. et al.	CA 5.8	2021	Glyphosate Herbicide: Reproductive Outcomes and Multigenerational Effects.	Frontiers in endocrinology, (2021), Vol. 12, Article No. 672532	The relevance of this article is unclear (Category C) for the following reason: This paper is a review of the literature that provides information on the effects of glyphosate and glyphosate based formulations on reproductive health and endocrine functions. Overall, there is an absence of criteria for selecting the publications and their relevance/acceptability. Analyses of the selected publications highlighted the importance and need of further evaluating the toxicology of glyphosate and its formulations to the reproductive performance. Most of the experiments were performed with glyphosate formulations and only few of them with pure glyphosate. However, the details on the test items used are not available for all the studies included in this review - some trade names are provided but not for all the studies. Moreover, the co-formulant POEA, is mentioned and likely to be included in some of the formulations. Lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
46	Mohammadi K. et al.	CA 5.8	2021	A systematic review and meta-analysis of the impacts of glyphosate on the reproductive hormones.	Environmental science and pollution research international, (2021) doi: 10.1007/s11356-021-16145-x	The relevance of this article is unclear (Category C) for the following reason: The paper is a review of the literature and meta-analysis that provides information on the effect of glyphosate on the reproductive hormones. Among the initial 279 records identified, 54 articles were retrieved for full-text evaluation, and then only eight studies were eligible for this systematic review and meta-analysis. There are some experiences performed with pure glyphosate, however the details on the test items used are not available for all the studies included in this review. Overall, the outcome of this review based on the qualified studies could suggest a possible effect of glyphosate and/or glyphosate based herbicides on the health reproductive system due to a tendency in decreasing testosterone and follicle-stimulating hormone (FLH). However, as indicated by the authors this review may be affected by a series of limitations among which the high heterogeneity within the hormonal measurements and the small sample size of the final eligible studies for this review. Lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.
47	Rossetti M. F. et al.	CA 5.8	2021	Epigenetic Changes Associated With Exposure to Glyphosate-Based Herbicides in Mammals.	Frontiers in endocrinology, (2021), Vol. 12, Article No. 671991	The relevance of this article is unclear (Category C) for the following reason: This paper is a review of the literature that provides information on epigenetic changes associated with exposure to glyphosate and glyphosate formulations. However, the details on the test items used are not available for all the studies included in this review.
49	Song Y. et al.	CA 8.2.5, CP 10.2.2	2020	protective effects of melatonin on survival, immune response, digestive enzymes activities and intestinal microbiota diversity in Chinese mitten crab (<i>Eriocheir sinensis</i>) exposed to glyphosate	Comparative biochemistry and physiology: CBP (2020), Vol. 238, Article No. 108845	The relevance of this article is unclear (Category C) for the following reason: The only information from this study that is relevant for the risk assessment is the effect of glyphosate on survival rate. The rest of the investigated parameters are all based on findings at cellular/mollecular level and therefore not relevant. Glyphosate has been tested at only one concentration (48.945 mg/L) and this concentrations was calculated as the 96 h LC50 value in a previous study. Mortality in this study at that concentration is lower than 50%, but still the relevance of the findings of this study for the risk assessment is not clear. In addition, the test item was not identified (not clear whether it is active substance or a product -and which kind of formulation.)
48	Weisenburger D. D. et al.	CA 5.8	2021	A Review and Update with Perspective of Evidence that the Herbicide Glyphosate (Roundup) is a Cause of Non-Hodgkin Lymphoma.	Clinical lymphoma, myeloma & leukemia, (2021), Vol. 21, No. 9, pp. 621-630	The relevance of this article is unclear (Category C) for the following reason: This paper is a review of the literature that provides information on exposure to glyphosate formulations and non-hodgkin lymphoma. However, the details on the formulation used are not available for all the studies included in this review.
50	Zaller J. G. et al.	CA 8.4.1, CP 10.4.1	2021	Effects of glyphosate-based herbicides and their active ingredients on earthworms, water infiltration and	Environmental Sciences Europe, (2021) Vol. 33, No. 1, Article No. 51	The relevance of this article is unclear (Category C) for the following reason: This is a greenhouse experiment where established weed populations of common amaranth (<i>Amaranthus retroflexus</i>) were sprayed with three glyphosate-based herbicides GBHs (Roundup LB Plus, Roundup PowerFlex, Touchdown Quattro) and their corresponding AIs (salts of glyphosate isopropylammonium, potassium, diammonium) to examine their effects on the activity and physiological

Submission Number	Author(s)	Data requirement (indicated by the corresponding CA / CP data point number)	Year	Title	Source	Justification
				glyphosate leaching are influenced by soil properties		biomarkers of the earthworm species <i>Lumbriculus terrestris</i>. The route of exposure to earthworms (herbicides were sprayed to the plants and not to the soil) is not in line with the EU process and therefore, no reliable endpoint can be established as not direct effects were assessed. Moreover, some of the studied variables are based on a cellular or molecular level and the only information that could be integrated in the EU evaluation is related to the variation in the density and activity of the earthworms 4 weeks after weed control applications. In addition, final conclusions were expressed in terms of GBH or AI and not for every single treatment. Nevertheless, weeds were treated at recommended dosages just as they would be applied to kill weeds before sowing, so the study somehow mimics what really happens to earthworms living in the soil when exposed to glyphosate residues after the weeds in a field are treated before sowing the crop. The soil is natural and glyphosate concentrations in soil and leachate were measured, so the real exposure to earthworms 26 days after GBH/AI applications is known.

Table 38: Articles excluded after detailed assessment (i.e. not relevant): sorted by technical section (and by author)

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
51	Ecotoxicology	Abdelmagid A. D. et al.	2021	Evaluation of <i>Foeniculum vulgare</i> impact on glyphosate hepato-toxicity in Nile tilapia: Biochemical, molecular and histopathological study	Aquaculture Research, (2021): Ahead of Print	The article has been classified as not relevant by full text for the following reason: The findings of this study are only based on cellular and molecular level that cannot be related to the risk assessment. The materials and methods section refers to an ecotoxicological LC50 endpoint, for which no information is provided.
52	Ecotoxicology	Banjare P. et al.	2021	Predictive classification-based QSTR models for toxicity study of diverse pesticides on multiple avian species	Environmental Science and Pollution Research, (2021), Vol. 28, No. 14, pp. 17992-18003	The article has been classified as not relevant by full text for the following reason: This article deals with general pesticide QSAR/QSTR effects models (not glyphosate specific) for birds, where glyphosate or a relevant metabolite are not the focus of the publication.
53	Ecotoxicology	Barbosa da Costa N. et al.	2021	Resistance, resilience, and functional redundancy of freshwater bacterioplankton communities facing a gradient of agricultural stressors in a mesocosm experiment.	Molecular ecology, (2021), Vol. 30, pp. 4771-4788	The article has been classified as not relevant by full text for the following reason: Roundup Super Concentrate contains POEA. This is clearly stated in the article by Muller et al. (2021): Toxicological Effects of Roundup® on <i>Drosophila melanogaster</i> Reproduction (Toxics 2021, 9, 161. https://doi.org/10.3390/toxics9070161). Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.
54	Ecotoxicology	Fantón N. et al.	2021	Biomarkers of exposure and effect in the armoured catfish <i>Hoplosternum littorale</i> during a rice production cycle	Environmental pollution, (2021), Vol. 287, Article No. 117356	The article has been classified as not relevant by full text for the following reason: This higher tier field study under the realistic conditions that the armoured catfish <i>Hoplosternum littorale</i> is exposed to a variety of pesticides during a rice production cycle is conducted in a rice field in Argentina. Therefore, this publication is considered not relevant because it does not deal with EU representative conditions. In addition, although metabolite AMPA bioaccumulation in fish liver and muscle was measured, the observed effects are caused by a mixture of compounds (mixture toxicity). No control group was used.
55	Ecotoxicology	Gao X. et al.	2021	Glyphosate exposure disturbs the bacterial endosymbiont community and reduces body weight of the predatory ladybird beetle <i>Harmonia axyridis</i> (Coleoptera: Coccinellidae).	The Science of the total environment, (2021), Vol. 790, Article No. 147847	The article has been classified as not relevant by full text for the following reason: The findings of this study do not generate endpoints that are relatable to the EU level risk assessment. Larvae of the non-target leaf-dwelling predatory ladybird beetle <i>Harmonia axyridis</i> were orally exposed to two different glyphosate concentration in sucrose solution. NTA oral exposure in the lab cannot be integrated into the EU RA scheme. Furthermore, some findings are based on cellular and molecular level that cannot be related to the risk assessment.

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
56	Ecotoxicology	Hébert M-P. et al.	2021	Widespread agrochemicals differentially affect zooplankton biomass and community structure.	Ecological applications : a publication of the Ecological Society of America, (2021), Article No. e02423	The article has been classified as not relevant by full text for the following reason: Roundup Super Concentrate contains POEA. This is clearly stated in the article by Muller et al. (2021): Toxicological Effects of Roundup(®) on Drosophila melanogaster Reproduction (Toxics 2021, 9, 161. https://doi.org/10.3390/toxics9070161). Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.
57	Ecotoxicology	Korkmaz V. et al.	2021	The bioremediation of glyphosate in soil media by some newly isolated bacteria: The COD, TOC removal efficiency and mortality assessment for Daphnia magna	Environmental technology & innovation, (2021), Vol. 22, Article No. 101535	The article has been classified as not relevant by full text for the following reason: The study design and the test system are not relevant for the European regulatory purposes. Daphnia magna was exposed to filtrated water taken from soil previously treated with a single concentration of 1000 mg glyphosate/L (not clear whether sprayed onto or mixed in). It is not possible to know which is the real concentration at which D. magna was exposed. In addition, the test item was not identified.
58	Ecotoxicology	Macri I. N. et al.	2021	Evaluating the impact of post-emergence weed control in honeybee colonies located in different agricultural surroundings.	Insects, (2021), Vol. 12, No. 2	The article has been classified as not relevant by full text for the following reason: The publication is dealing with genetically modified crops, which is not relevant for the glyphosate EU renewal. In addition, the experiment was performed with a mixture of 3 commercially formulated herbicides: an atrazine-based herbicide (Gesaprim® Syngenta), a 2,4-D-based herbicide (Voleris® Syngenta) and a glyphosate-based herbicide (Sulfosato Touchdown® Syngenta), thus the effect cannot be attributable to the substance of concern and can be seen as a consequence of the mixture toxicity. Based on the information in the safety data sheet provided on Syngenta's webpage (https://www.syngenta.com.ar/product/crop-protection/herbicida-no-selectivo/sulfosato-touchdown), Sulfosato Touchdown formulation contains polyethoxylated tallow amine (POEA). Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example,

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
						POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal. Finally, the study was conducted under field conditions in Argentina and therefore, not representative for the EU conditions.
59	Ecotoxicology	Muller K. et al.	2021	Toxicological Effects of Roundup® on Drosophila melanogaster Reproduction.	Toxics, (2021), Vol. 9, No. 7	The article has been classified as not relevant by full text for the following reason: None of the formulations tested is the representative formulation for the EU glyphosate renewal. Roundup® Ready to Use is a mixture of pelargonic acid and glyphosate thus the effects observed cannot be attributable to glyphosate only and can be seen as a consequence of the mixture toxicity. Roundup® Super Concentrate contains POEA. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.
60	Ecotoxicology	Sudmoon R. et al.	2021	The effect of glyphosate on genotoxicity in Ipomoea aquatica	Toxicological & Environmental Chemistry, (2021) : Ahead of Print.	The article has been classified as not relevant by full text for the following reason: This study investigates the effects of glyphosate on growth rate and genotoxicity of Ipomoea aquatica. The plants were grown in a soil collected from an organic agricultural field in Thailand which was supplemented with glyphosate at 1- to 3-fold the recommended dose. After 30 days, lengths and dry weights of the roots and shoots were found to decrease in a concentration dependent manner. The study aimed to simulate field conditions and the plants were grown in the open field with added organic fertilizers. Therefore, the publication is not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.) and it is not relevant for the risk assessment. In addition, the concentration of glyphosate in the soil was not analyzed.
61	Ecotoxicology	Torres-Badia M. et al.	2021	Impaired mammalian sperm function and lower phosphorylation signaling caused by the herbicide Roundup® Ultra Plus are due to its surfactant component.	Theriogenology, (2021), Vol. 172, pp. 55-66	The article has been classified as not relevant by full text for the following reason: Pig spermatozoa were incubated in Tyrode's basal medium (TBM) or Tyrode's complete medium (TCM) (1 h at 38.5 C) with several Roundup dilutions or equivalent concentrations of glyphosate or POEA. The study design, the test system and mostly the exposure route are not relevant for the European regulatory purposes regarding ecotoxicology. In addition, most of the findings are based on

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
						cellular and molecular level that cannot be related to the risk assessment. In addition, the formulation tested contains POEA (See Materials and Methods - The commercially available Roundup® Ultra Plus contains 36% (w/v) of the active ingredient glyphosate (GLY) and 6% (w/v) of the surfactant, polyoxyethylene amine (POEA).
62	Ecotoxicology	Torres-Moya F. et al.	2020	Study of the effects of glyphosate application on Collembola populations under controlled conditions.	Agronomia Colombiana, (2020), Vol. 38, No. 3, pp. 398-405	The article has been classified as not relevant by full text for the following reason: The objective of this research was to determine the effect of the application of different glyphosate doses on variation in collembolan (springtail) populations, but the study design, the test system and the mode of exposure of this study are not relevant for the European regulatory purposes. In addition, the publication does not deal with EU representative conditions (e.g. soil properties, non-EU monitoring of populations) because part of the soil used for the tests as well as all tested individuals were taken from a field location in Colombia.
63	Ecotoxicology	Wided O. et al.	2021	Protective role of <i>Spirulina platensis</i> against glyphosate induced toxicity in marine mussel <i>Mytilus galloprovincialis</i>	Journal of Environmental Science and Health, Part C: Toxicology and Carcinogenesis, (2021): Ahead of Print	The article has been classified as not relevant by full text for the following reason: The findings of this study are only based on cellular and molecular level that cannot be related to the risk assessment.
64	Ecotoxicology	Yang C. et al.	2021	Reproductive toxicity due to herbicide exposure in freshwater organisms.	Comparative biochemistry and physiology. Toxicology & pharmacology, (2021), Vol. 248, Article No. 109103	The article has been classified as not relevant by full text for the following reason: This review article presents only secondary information dealing with general herbicide exposures (not glyphosate specific), where no new data is provided that can be used for risk assessment.
65	Ecotoxicology	Zheng T. et al.	2022	Alleviative effects of Ginkgo biloba extract on oxidative stress, inflammatory response and immune suppression induced by long-term glyphosate exposure in tilapia (<i>Oreochromis niloticus</i>)	Aquaculture, (2022), Vol. 546, Article No. 737325	The article has been classified as not relevant by full text for the following reason: The findings of this study are only based on cellular and molecular level that cannot be related to the risk assessment.
66	Fate and behaviour in the environment	Barrow N. J.	2021	Some comments on: Phosphate and glyphosate sorption in soils following long-term phosphate applications by Munira et al. (2018)	Geoderma, (2021), Vol. 402, Article No. 115334	The article has been classified as not relevant by full text for the following reason: The article is commenting on another article (Phosphate and glyphosate sorption in soils following long-term phosphate applications by Munira et al. (2018)). The comment is related to the influence of phosphate on the adsorption of glyphosate. Another equation for calculating the K _f value in the presence of phosphate is proposed. There is no impact on the results for non-phosphate-amended soil. Furthermore the comment does not give any results but only further recommendations for data evaluation and interpretation.
67	Fate and behaviour in the environment	Sadatsharifi M. et al.	2021	The fate of a hazardous herbicide: a DFT-based ab initio study on glyphosate degradation.	Environmental science. Processes & impacts, (2021), Vol. 23, No. 7, pp. 1018-1028	The article has been classified as not relevant by full text for the following reason: Calculations were performed using density functional theory and post-Hartree-Fock correlated ab initio methods to find the possible mechanisms for the degradation process by small (hydroxyl, peroxy, and superoxide) radicals. Rate constants (s ⁻¹) were calculated from the ab initio results for different elementary steps (transition steps for the reaction of glyphosate anions and radicals). No endpoints for EU risk assessment are generated. Quantum chemical calculations were

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
						applied to determined structures and energies of molecular forms (isomers, intermediates, transition states) of glyphosate.
68	Fate and behaviour in the environment	Voutchkova D. D. et al.	2021	Estimating pesticides in public drinking water at the household level in Denmark	GEUS BULLETIN, (2021), Vol. 47, DOI:10.34194/geusb.v47.6090	The article has been classified as not relevant by full text for the following reason: Data on pesticide residues in Danish drinking water was taken from the national database Jupiter (https://eng.geus.dk/products-services-facilities/data-andmaps/national-well-database-jupiter). The highest amount detected was 3.2 µg/L for glyphosate and 1.2 µg/L for AMPA (see supplemental material). No information on location and timing of the detection are reported. The article contains secondary information and does not generate new data. Jupiter database was covered by applicant's evaluation on public monitoring data.
69	Toxicology and metabolism	Barbosa A. et al.	2021	Study of muscle fibers of the extensor digitorum longus and soleus muscles of C57BL/6 females exposed to glyphosate during pregnancy and lactation.	Einstein (Sao Paulo, Brazil), (2021), Vol. 19, Article No. eAO5657	The article has been classified as not relevant by full text for the following reason: The aim of this study was to evaluate the morphology and morphometry of the muscles extensor digitorum longus and soleus of C57BL/6 females, who were exposed to glyphosate during pregnancy and lactation. Glyphosate group presented lower weight gain during pregnancy and also lower final body weight and naso-anal length; however, the other body parameters evaluated did not present a significant difference in relation to the Control Group. Significant differences were also not observed in the analysis of muscle fibers and connective tissue. Importantly, although weight gain was measured, there were not records of feed intake for each group, which is most likely the main determinant in ascribing cause for the weight differences reported. The publication is dealing with a glyphosate formulation Roundup Original containing POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal.
70	Toxicology and metabolism	de Maria Serra F. et al.	2021	Subchronic exposure to a glyphosate-based herbicide causes dysplasia in the digestive tract of Wistar rats.	Environmental science and pollution research international, (2021), Vol. 28, pp. 61477-61496	The article has been classified as not relevant by full text for the following reason: The publication is dealing with a glyphosate formulation Roundup Original containing POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal.
71	Toxicology and metabolism	Giambo F. et al.	2021	Toxicology and Microbiota: How Do Pesticides Influence Gut Microbiota? A Review	INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, (2021), Vol. 18, No. 11	The article has been classified as not relevant by full text for the following reason: This paper is a review of the literature on the influence of pesticide exposure on gut microbial. Glyphosate is mentioned in only one paragraph of the article and no information is available on the test item, the experimental conditions and the description of the results.
72	Toxicology and metabolism	Kogevinas M.	2021	Glyphosate Exposure during Pregnancy and Preterm Birth (More Research Is Needed).	Environmental health perspectives, (2021), Vol. 129, No. 5, Article No. 51301	The article has been classified as not relevant by full text for the following reason: This is a commentary on a single published article, not original research. There is no study design or study population per se. There is no information in this commentary to evaluate the appropriateness of a study population. The conclusion of the author is that more research is needed. As such, the commentary does not

Submission Number	Technical section	Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance criteria)
						contribute relevant / reliable information to the assessment of risk from glyphosate use.
73	Toxicology and metabolism	Mesnager R. et al.	2020	Computational modelling provides insight into the effects of glyphosate on the shikimate pathway in the human gut microbiome.	Current research in toxicology, (2020), Vol. 1, pp. 25-33	The article has been classified as not relevant by full text for the following reason: The publication studies the presence and activity of the shikimate pathway by assessing faecal metagenomes from different datasets. There is also the reference to a previous microbiome study to understand the effects of glyphosate/glyphosate formulated product on the gut microbiota at different stages of the rat digestive tract. However, the main part of the article is focussing on the metagenomes and metatranscriptomes and not evaluating the effect on gut microbiota after exposure to glyphosate. Moreover, potential effects to gut microbiota and serum metabolome are not part of the EU risk assessments.

Appendix 1: AGG ADVICE on how to present the literature search in the dossier**ASSESSMENT GROUP ON GLYPHOSATE (AGG)**

October 2019

**ADVICE TO GTF2:
HOW TO PRESENT THE LITERATURE SEARCH
IN THE DOSSIER TO BE SUBMITTED JUNE 2020**

The literature search should be carried out and presented as recommended in the EFSA Guidance EFSA Journal 2011;9(2):2092) including its recently published Appendix, available at the EFSA Journal.

**Rapid assessment of
titles/abstracts:**

Articles that are
considered as **not
relevant**:

Not necessary to submit
articles or study
summaries but
justification needed at a
general level, i.e. criteria
used to classify references
as being clearly non-
relevant.

**Detailed assessment of
full text of articles:**
Articles that are
considered as **not
relevant**
or
considered **not reliable**:

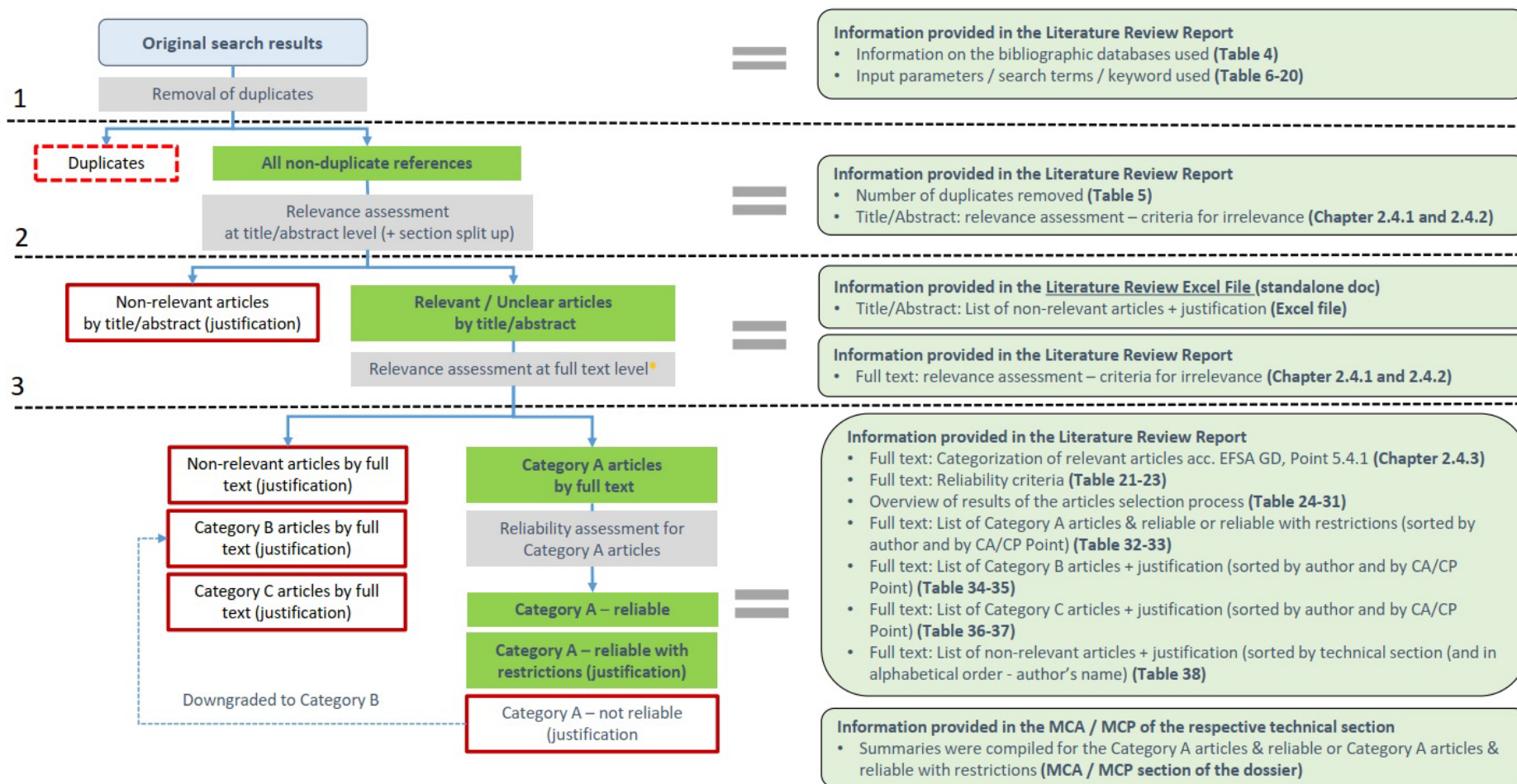
Necessary to submit
articles and statement
with the reason of
rejection (no study
summaries).

**Detailed assessment of
full text of articles:**
Articles considered as
relevant and reliable:

Necessary to submit
articles. A detailed study
summary should be
provided in the relevant
section of Doc
MCA/MCP.

For presentation of
detailed study summary,
reference is made to
EFSA Administrative
guidance on submission
of dossiers and
assessment reports for
the peer-review of
pesticide active
substances (27 March
2019, doi:
10.2903/sp.efsa.2016.EN
-1612).

Appendix 2: The process of articles selection



* All articles (and their translations) evaluated at full-text level (detailed assessment) are submitted to the AGG.

Appendix 3: ORIGINAL SEARCH QUERY – 14 May 2021 – August 2021

Preparing the search queries on STN:

FILE 'STNGUIDE' ENTERED AT 10:45:08 ON 08 SEP 2021
CHARGED TO COST=113898

L1 QUE SPE=ON ABB=ON PLU=ON GLYPHOSAT? OR GLIFOSAT? OR
GLYFOSAT? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-
5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR
69254-40-6 OR AMINOMETHYL PHOSPHONIC OR AMINOMETHYLPHOSPHONIC
OR 1066-51-9
SAVE TEMP L1 GLY1/Q

L2 QUE SPE=ON ABB=ON PLU=ON 2 ACETYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR N ACETYL GLYPHOSATE OR N ACETYLGLYPHOSATE OR N
ACETYL N PHOSPHONOMETHYL GLYCINE OR 129660-96-4 OR N ACETYL
AMPA OR ACETYLAMINO METHYL PHOSPHONIC ACID OR ACETYLAMINOMETHYL
PHOSPHONIC ACID OR 57637-97-5
SAVE TEMP L2 GLY2/Q

L3 QUE SPE=ON ABB=ON PLU=ON 2617-47-2 OR HYDROXYMETHANEPHOSPHON
IC ACID OR HYDROXYMETHYL PHOSPHONATE OR HYDROXYMETHYL PHOSPHONI
C ACID OR METHANEHYDROXYPHOSPHONIC ACID OR PHOSPHONIC ACID(1W)H
YDROXYMETHYL OR PHOSPHONOMETHANOL

L4 QUE SPE=ON ABB=ON PLU=ON HYDROXYMETHYLPHOSPHONATE OR
HYDROXYMETHYLPHOSPHONIC ACID

L5 QUE SPE=ON ABB=ON PLU=ON L3 OR L4
SAVE TEMP L5 GLY3/Q

L6 QUE SPE=ON ABB=ON PLU=ON 35404-71-8 OR METHYLAMINO METHYL
PHOSPHONIC ACID OR METHYLAMINOMETHYL PHOSPHONIC ACID OR
METHYLAMINOMETHYLPHOSPHONIC ACID OR N METHYL AMPA OR NSC
244826 OR PHOSPHONIC ACID METHYLAMINO METHYL OR PHOSPHONIC
ACID P METHYLAMINO METHYL

L7 QUE SPE=ON ABB=ON PLU=ON 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETH
YL PHOSPHONIC ACID OR 2 3 DIHYDROXY 1 OXOPROPYL AMINOMETHYLPHOS
PHONIC ACID OR N GLYCERYL AMPA

L8 QUE SPE=ON ABB=ON PLU=ON 3 OXO 3 PHOSPHONOMETHYL AMINO
PROPANOIC ACID OR 3 OXO 3 PHOSPHONOMETHYL AMINOPROPANOIC ACID
OR N MALONYL AMPA

L9 QUE SPE=ON ABB=ON PLU=ON 993-13-5 OR DIHYDROGEN METHYLPHOSPH
ONATE OR METHANEPHOSPHONIC ACID OR METHYL PHOSPHONIC ACID OR
METHYLPHOSPHONIC ACID OR NSC 119358 OR PHOSPHONIC ACID METHYL
OR PHOSPHONIC ACID P METHYL

L10 QUE SPE=ON ABB=ON PLU=ON (L6 OR L7 OR L8 OR L9)
SAVE TEMP L10 GLY4/Q

L11 QUE SPE=ON ABB=ON PLU=ON 24569-83-3 OR 2 METHYL PHOSPHONOMET
HYL AMINO ACETIC ACID OR 2 METHYL PHOSPHONOMETHYL AMINOACETIC
ACID OR ACETIC ACID 2 N METHYL N PHOSPHONATOMETHYL AMINO OR
GLYCINE N METHYL N PHOSPHONOMETHYL OR GLYPHOSATE N METHYL OR
METHYL GLYPHOSATE

L12 QUE SPE=ON ABB=ON PLU=ON METHYL PHOSPHONOMETHYL AMINO
ACETIC ACID OR METHYL PHOSPHONOMETHYL AMINOACETIC ACID OR N
METHYL N PHOSPHONOMETHYL GLYCINE OR N METHYLGLYPHOSATE OR N
PHOSPHONOMETHYL N METHYL GLYCINE OR N PHOSPHONOMETHYL N
METHYLGLYCINE

L13 QUE SPE=ON ABB=ON PLU=ON (L11 OR L12)
SAVE TEMP L13 GLY5/Q

L14 QUE SPE=ON ABB=ON PLU=ON TOX? OR HAZARD? OR ADVERSE OR
HEALTH OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR IN VIVO OR
IN VITRO OR INVIVO OR INVITRO OR MODE OF ACTION OR SKIN? OR
EYE? OR IRRIT? OR SENS? OR ALLERG?

L15 QUE SPE=ON ABB=ON PLU=ON RAT OR RATS OR DOG? OR RABBIT? OR
GUINEA PIG? OR MOUSE OR MICE OR METABOLISM OR METABOLITE? OR
METABOLIC OR DISTRIBUTION OR ADSORPTION OR EXCRETION OR
ELIMINATION OR KINETIC OR CYTOCHROME OR ENZYM?

L16 QUE SPE=ON ABB=ON PLU=ON GEN? OR MUTA? OR CHROMOS? OR
CLASTOGEN? OR DNA OR CARCINO? OR CANCER? OR TUMOR? OR TUMOUR?
OR ONCOG? OR ONCOL? OR MALIGN? OR IMMUN? OR NEUR? OR ENDOCRIN?
OR HORMON? OR GONAD? OR DISRUPT?

L17 QUE SPE=ON ABB=ON PLU=ON REPRODUCT? OR DEVELOPMENT? OR
MALFORM? OR ANOMAL? OR FERTIL? OR FOET? OR FET? OR MATERN? OR
PREGNAN? OR EMBRYO? OR EPIDEM? OR MEDICAL? OR POISON? OR
EXPOSURE OR OPERATOR? OR BYSTANDER? OR RESIDENT? OR WORKER? OR
OCCUPAT?

L18 QUE SPE=ON ABB=ON PLU=ON BIOMONITORING OR HUMAN EXPOSURE OR
MICROBIOME OR OXIDATIVE STRESS OR APOPTOSIS OR NECROSIS OR
CYTOTOXICITY OR POLYOXYETHYLENEAMINE OR POEA OR SURFACTANT OR
RISK ASSESSMENT?

L19 QUE SPE=ON ABB=ON PLU=ON (L14 OR L15 OR L16 OR L17 OR L18)
SAVE TEMP L19 TOX/Q

L20 QUE SPE=ON ABB=ON PLU=ON UPTAKE OR TRANSLOCATION OR RUMEN
OR STORAGE STABILITY OR STORAGE OR STABILITY OR METABOLIC OR
METABOLISM OR BREAKDOWN OR NATURE OF RESIDUES OR RESIDUE? OR
MAGNITUDE OF RESIDUES OR PROCESS? OR EFFECTS OF PROCESSING

L21 QUE SPE=ON ABB=ON PLU=ON DESSICANT OR PREHARVEST OR
PREEMERG? OR ?RESISTANT? OR ?TOLERAN? OR TRANSGENIC OR
HYDROLY? OR ROTATION? OR SUCCEED? OR PLANT? OR CROP? OR FEED?
OR ANIMAL? OR LIVESTOCK? OR HEN OR CATTLE OR RUMINANT?

L22 QUE SPE=ON ABB=ON PLU=ON GOAT? OR COW? OR PIG? OR DIETARY
OR ASSESSMENT OR RISK ASSESSMENT OR CONSUM? OR EXPOSURE

L23 QUE SPE=ON ABB=ON PLU=ON (L20 OR L21 OR L22)
SAVE TEMP L23 RES/Q

L24 QUE SPE=ON ABB=ON PLU=ON SOIL OR WATER OR SEDIMENT OR
DEGRADAT? OR PHOTO? OR SOIL RESIDUES OR SOIL ACCUMULAT? OR

- SOIL CONTAMINAT? OR MOBILITY OR SORPTION OR COLUMN LEACHING OR
AGED RESIDUE OR LEACH? OR LYSIMETER OR GROUNDWATER
- L25 QUE SPE=ON ABB=ON PLU=ON CONTAMINAT? OR MICROB? OR EXUDATION
OR RHIZOSPHERE OR DISSIPATION OR SATURATED ZONE OR HYDROLYSIS
OR DRIFT OR RUN-OFF OR RUNOFF OR DRAINAGE OR VOLAT? OR
ATMOSPHERE OR LONG-RANGE TRANSPORT OR SHORT-RANGE TRANSPORT
- L26 QUE SPE=ON ABB=ON PLU=ON TRANSPORT OR MICRONUTRIENT OR
PHOSPHATE OR IRON OR MANGANESE OR HALF-LIFE OR HALFLIFE OR
HALF-LIVES OR HALFLIVES OR DT50 OR KINETICS OR OFF-SITE
MOVEMENT OR REMOVAL OR DRINKING WATER OR WATER TREATMENT
PROCESSES
- L27 QUE SPE=ON ABB=ON PLU=ON ATMOSPHERIC DEPOSITION OR TILE-DRAI
NS OR SURFACE WATER OR MONITORING DATA OR DISINFECTANT OR
OZONE OR TILLAGE OR INFILTRATION OR HARD SURFACE OR RAINWATER
OR RAIN WATER OR CHELAT? OR COMPLEX? OR MINERALIZATION OR
PERSISTENCE OR LIGAND
- L28 QUE SPE=ON ABB=ON PLU=ON (L24 OR L25 OR L26 OR L27)
SAVE TEMP L28 FATE/Q
- L29 QUE SPE=ON ABB=ON PLU=ON TOX? OR ECOTOX? OR ?TOXIC OR
?TOXICITY OR HAZARD OR ADVERSE OR ENDOCRINE DISRUPT? OR
BIOACCUMULATE? OR BIOMAGNIFI? OR BIOCONCENTRATION OR POISON OR
EFFECT OR INDIRECT EFFECT? OR DIRECT EFFECT? OR BIODIVERS? OR
PROTECTION GOALS OR ECO?
- L30 QUE SPE=ON ABB=ON PLU=ON IMPACT OR POPULATION OR COMMUNITY
OR WILDLIFE OR INCIDENT OR PEST OR BIRD? OR ACUTE OR CHRONIC
OR LONG-TERM OR MALLARD OR DUCK OR QUAIL OR BOBWHITE OR ANAS?
OR COLINUS? OR WILD OR DIETARY OR AQUATIC OR FISH OR DAPHNI?
OR ALG? OR CHIRON?
- L31 QUE SPE=ON ABB=ON PLU=ON SEDIMENT DWELL? OR BENTHIC OR
LEMNA OR MARIN? OR ESTUARINE OR CRUSTA? OR GASTROPOD? OR
INSECT OR MOLLUSC OR REPTILE OR AMPHIB? OR BEE? OR APIS OR
APIDAE OR BUMBLE? OR COLONY OR HIVE OR POLLINATOR
- L32 QUE SPE=ON ABB=ON PLU=ON PLANT AND (SUBMERGE? OR EMERGE?)
- L33 QUE SPE=ON ABB=ON PLU=ON SOLITARY OR ALG? OR AQUATIC OR
FRESHWATER OR VERTEBRAT? OR MAMMAL? OR RAT OR MOUSE OR MICE OR
RABBIT OR HARE OR PROTECTION OR MODEL? OR VOLE OR PEST OR
ARTHROPOD? OR BENEFICIALS OR TYPHLODROMUS OR APHIDIUS OR
PARASITOID
- L34 QUE SPE=ON ABB=ON PLU=ON PREDATOR OR CHRYSOPERLA OR ORIUS
OR SPIDER OR WORM? OR ?WORM OR EISENIA OR SOIL OR COLLEMBOL?
OR MACRO ORGANISM OR FOLSOMIA OR SPRINGTAIL OR DECOMPOS? OR
MICRO ORGANISMS OR MICROORGANISMS OR MICROBIAL OR CARBON OR
NITROGEN
- L35 QUE SPE=ON ABB=ON PLU=ON PLANT? OR VEGETATIVE VIGO? OR
SEEDLING OR GERMINATION OR MONOCOT? OR DICOT? OR SEWAGE OR
ACTIVATED SLUDGE OR BIODEGRAD? OR BIOACCUMULATION? OR AMPHIB?
OR REPTILE? OR AQUATIC PLANT OR BENEFICIAL
- L36 QUE SPE=ON ABB=ON PLU=ON (L29 OR L30 OR L31 OR L32 OR L33
OR L34 OR L35)
SAVE TEMP L36 ECO/Q

Final search - Update Sep 2021:

FILE 'MEDLINE' ENTERED AT 10:52:47 ON 08 SEP 2021

CHARGED TO COST=113898

- L1 4783 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L2 158 SEA SPE=ON ABB=ON PLU=ON L1 AND ED>20210513
- L3 158 SEA SPE=ON ABB=ON PLU=ON L2 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L3 GLYMEDL/A

FILE 'AGRICOLA' ENTERED AT 10:55:50 ON 08 SEP 2021

CHARGED TO COST=113898

- L4 7886 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L5 287 SEA SPE=ON ABB=ON PLU=ON L4 AND ED>20210513
- L6 287 SEA SPE=ON ABB=ON PLU=ON L5 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L6 GLYAGRI/A

FILE 'BIOSIS' ENTERED AT 10:59:54 ON 08 SEP 2021

CHARGED TO COST=113898

- L7 12042 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L8 257 SEA SPE=ON ABB=ON PLU=ON L7 AND ED>20210513
- L9 239 SEA SPE=ON ABB=ON PLU=ON L8 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L9 GLYBIOS/A

FILE 'CABA' ENTERED AT 11:02:35 ON 08 SEP 2021

CHARGED TO COST=113898

- L10 19905 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L11 353 SEA SPE=ON ABB=ON PLU=ON L10 AND ED>20210513
- L12 353 SEA SPE=ON ABB=ON PLU=ON L11 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L12 GLYCABA/A

FILE 'FSTA' ENTERED AT 11:05:19 ON 08 SEP 2021

CHARGED TO COST=113898

- L13 602 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
- L14 21 SEA SPE=ON ABB=ON PLU=ON L13 AND ED>20210513
- L15 19 SEA SPE=ON ABB=ON PLU=ON L14 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L15 GLYFSTA/A

FILE 'PQSCITECH' ENTERED AT 11:07:39 ON 08 SEP 2021

CHARGED TO COST=113898

L16 5751 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L17 126 SEA SPE=ON ABB=ON PLU=ON L16 AND ED>20210513
L18 111 SEA SPE=ON ABB=ON PLU=ON L17 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L18 GLYPQSCI/A

FILE 'TOXCENTER' ENTERED AT 11:11:02 ON 08 SEP 2021

CHARGED TO COST=113898

L19 18156 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L20 429 SEA SPE=ON ABB=ON PLU=ON L19 AND ED>20210513
L21 353 SEA SPE=ON ABB=ON PLU=ON L20 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L21 GLYTOXC/A

FILE 'EMBASE' ENTERED AT 11:13:40 ON 08 SEP 2021

CHARGED TO COST=113898

L22 6368 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L23 121 SEA SPE=ON ABB=ON PLU=ON L22 AND ED>20210513
L24 120 SEA SPE=ON ABB=ON PLU=ON L23 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L24 GLYEMBA/A

FILE 'ESBIOBASE' ENTERED AT 11:16:19 ON 08 SEP 2021

CHARGED TO COST=113898

L25 5510 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L26 129 SEA SPE=ON ABB=ON PLU=ON L25 AND ED>20210513
L27 129 SEA SPE=ON ABB=ON PLU=ON L26 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L27 GLYESBIO/A

FILE 'HCAPLUS' ENTERED AT 11:18:54 ON 08 SEP 2021

CHARGED TO COST=113898

L28 31160 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L29 440 SEA SPE=ON ABB=ON PLU=ON L28 AND ED>20210513
L30 272 SEA SPE=ON ABB=ON PLU=ON L29 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L30 GLYHCAP/A

FILE 'SCISEARCH' ENTERED AT 11:20:57 ON 08 SEP 2021

CHARGED TO COST=113898

L31 13214 SEA SPE=ON ABB=ON PLU=ON GLY1/Q OR GLY2/Q OR GLY3/Q OR
GLY4/Q OR GLY5/Q
L32 390 SEA SPE=ON ABB=ON PLU=ON L31 AND ED>20210513
L33 387 SEA SPE=ON ABB=ON PLU=ON L32 NOT (COMMENT? OR DISSERTATION
OR EDITORIAL OR MEETING? OR NEWS? OR PATENT OR PRESS RELEASE)/DT
SAVE TEMP L33 GLYSCIS/A

FILE 'HOME' ENTERED AT 11:23:03 ON 08 SEP 2021

CHARGED TO COST=113898

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,

EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 11:26:51 ON 08 SEP 2021

CHARGED TO COST=113898

L34 1443 DUP REM L3 L6 L9 L12 L15 L18 L21 L24 L27 L30 L33 (985 DUPLICATE
ANSWERS '1-158' FROM FILE MEDLINE
ANSWERS '159-436' FROM FILE AGRICOLA
ANSWERS '437-632' FROM FILE BIOSIS
ANSWERS '633-907' FROM FILE CABA
ANSWERS '908-919' FROM FILE FSTA
ANSWERS '920-999' FROM FILE PQSCITECH
ANSWERS '1000-1132' FROM FILE TOXCENTER
ANSWERS '1133-1170' FROM FILE EMBASE
ANSWERS '1171-1199' FROM FILE ESBIOBASE
ANSWERS '1200-1275' FROM FILE HCAPLUS
ANSWERS '1276-1443' FROM FILE SCISEARCH
SAVE L34 GLY202109/A

L35 1162 SEA SPE=ON ABB=ON PLU=ON L34 AND TOX/Q
SAVE TEMP L35 GLYTOX/A

L36 1285 SEA SPE=ON ABB=ON PLU=ON L34 AND RES/Q

L37 869 SEA SPE=ON ABB=ON PLU=ON L34 AND FATE/Q
SAVE TEMP L37 GLYFATE/A

L38 1365 SEA SPE=ON ABB=ON PLU=ON L34 AND ECO/Q

L39 1431 SEA SPE=ON ABB=ON PLU=ON (L35 OR L36 OR L37 OR L38)
SAVE L39 GLY202109FIN/A

FILE 'MEDLINE, AGRICOLA, BIOSIS, CABA, FSTA, PQSCITECH, TOXCENTER,

EMBASE, ESBIOBASE, HCAPLUS, SCISEARCH' ENTERED AT 12:56:47 ON 08 SEP 2021

CHARGED TO COST=113898

D ALL 1-TOT

SESSION WILL BE HELD FOR 120 MINUTES

STN INTERNATIONAL SESSION SUSPENDED AT 14:10:05 ON 08 SEP 2021

別添資料 1

第2段階で評価の目的と適合しないと見なされた文献リスト及びその理由

- ・ ヒトに対する毒性、Toxicology
- ・ 農作物及び畜産物への残留、Residues
- ・ 生活環境動植物及び家畜に対する毒性、Ecotoxicology
- ・ 環境動態、E-fate
- ・ 薬効、Efficacy

(PDF のしおり機能で各分野のリストに移ります。)

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Neonatal exposure to a glyphosate-based herbicide alters the uterine differentiation of prepubertal ewe lambs.	Alarcon Ramiro; Ingaramo Paola I; Tschopp Maria V; Milesi Mercedes M; Munoz-de-Toro Monica; Rivera Oscar E; Dioguardi Gisela H; Luque Enrique H	Environmental pollution (Barking, Essex : 1987), (2020 Jun 17) Vol. 265, No. Pt B, pp. 114874. Electronic Publication Date: 17 Jun 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Roundup FULL II® (Argos SRL, Santa Fe, Argentina), a liquid water-soluble formulation containing 54 g of glyphosate in 100 mL of commercial formulation is not the EU representative formulation and therefore not relevant to the EU assessment. In addition, direct injection into the neck of pregnant ewes with formulated product containing surfactant is not relevant to real life exposure scenarios. Environmental fate, metabolism and pharmacokinetics for glyphosate active ingredient versus surfactants are very different. Given the direct systemic exposure, these data are considered irrelevant to livestock and human health risk assessments.			
Toxicity of pesticides toward human immune cells U-937 and HL-60.	Barbasz Anna; Kreczmer Barbara; Skorka Magdalena; Czyzowska Agnieszka	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2020 Jun 13) pp. 1-7. Electronic Publication Date: 13 Jun 2020 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	Human histiocytic lymphoma cell line (U-937) and human promyelocytic cell line (HL-60) were exposed to glyphosate at a concentrations from 1.3 mM to 21.3 mM. Although the data are accurate, the doses selected are not physiologically relevant to human health risk assessment. Effects are noted well in excess of physiologically relevant doses and therefore, are not applicable to the risk assessment.			
Integrated approach to evaluate the association between exposure to pesticides and idiopathic premature thelarche in girls: The PEACH project.	Coppola, Lucia; Tait, Sabrina; Rocca, Cinzia La (correspondence) Coppola, Lucia Ciferri, Lorella Frustagli, Gianluca Merola, Carmine; Perugini, Monia Fabbri, Enrica Fabbri, Enrica	International Journal of Molecular Sciences, (1 May 2020) Vol. 21, No. 9, pp. 3282. Refs: 41 ISSN: 1661-6596; E-ISSN: 1422-0067	Non-relevant by full text	No results are provided in the article, only a section with expected results is included. The article does not provide any new information that can be used in the risk assessment.			
Glyphosate and its toxicology: A scientometric review.	de Castilhos Ghisi Nedra Zuanazzi Natana Raquel; Oliveira Elton Celton Fabrin Thomaz Mansini Carrenho	The Science of the total environment, (2020 Sep 01) Vol. 733, pp. 139359. Electronic Publication Date: 12 May 2020 Journal code: 030500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	This scientometric review does not focus on toxicological endpoints following a glyphosate exposure of any kind. No relevant information or conclusion on the toxicity of glyphosate for the risk assessment can be drawn.			
Wastewater-based epidemiology approach to assess population exposure to pesticides: a review of a pesticide pharmacokinetic dataset	Devault, Damien Alain; Karolak, Sara	Environmental science and pollution research international (2020), Volume 27, Number 5, pp. 4695-4702 ISSN: 0944-1344 Published by: Springer Berlin Heidelberg Source Note: 2020 Feb., v. 27, no. 5	Non-relevant by full text	This publication is a literature review and does not contain any toxicological endpoints following the exposure to glyphosate. It rather aims to identify from literature if it is possible to use waste-waterbased epidemiology to assess human exposure to different pesticides. The article cannot contribute to the risk assessment of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Roundup-induced biochemical and histopathological changes in the liver and kidney of rats: the ameliorative effects of Linum usitatissimum oil.	Djaber, Nesrine; Ounaceur, Lynda Sabrina; Moubine, Baya Nouha; Khaldi, Taha; Rouag, Mereim; Berrouague, Salma; Amara, Hichem; Taibi, Faiza; Boumendjel, Mahieddine; Boumendjel, Amel; Messarah, Mahfoud [Reprint Author]	Acta Biochimica Polonica, (2020) Vol. 67, No. 1, pp. 53-64. http://ojs.ptbioch.edu.pl/index.php/abp . CODEN: ABPLAF. ISSN: 0001-527X. E-ISSN: 1734-154X.	Non-relevant by full text	Roundup TURBO (450 g/L) is not the EU representative formulation and therefore not relevant to the EU assessment. The Roundup dosing rationale in the study appeared to be to intentionally elicit toxic effects and endorse the administration of Linum usitatissimum oil (LuO) to counter toxicity to liver/kidney tissue (perhaps preventive?). With this approach the dosing regime is a major flaw in the study design as only one dose level was selected and it is unclear what effects may have been seen, if any, at more relevant exposure levels.			
Intranasal glyphosate-based herbicide administration alters the redox balance and the cholinergic system in the mouse brain.	Gallegos Cristina Eugenia; Bartos Mariana; Gumilar Fernanda; Minetti Alejandra Raisman-Vozari Rita Baier Carlos Javier	Neurotoxicology, (20200300) Vol. 77, pp. 205-215. Electronic Publication Date: 25 Jan 2020 Journal code: 7905589. E-ISSN: 1872-9711. L-ISSN: 0161-813X.	Non-relevant by full text	Glifloglex®, marketed in Argentina, is not the EU representative formulation and therefore not relevant to the EU risk assessment / glyphosate renewal.			
Exposure to a Glyphosate-based Herbicide Alters the Expression of Key Regulators of Mammary Gland Development on Pre-pubertal Male Rats.	Gomez Ayelen L; Altamirano Gabriela A; Munoz-de-Toro Monica Tschopp Maria V Bosquiaz Veronica L Kass Laura	Toxicology, (2020 Jun) Vol. 439, pp. 152477. Electronic Publication Date: 29 Apr 2020 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Non-relevant by full text	In vivo study on pre and post natal effects of Glyphosate-based herbicide (GBH) administered to Wistar female rat at 3.5 and 350 mg/kg/day (8-10 females rat/group). Glyphosate-based herbicide (Glyphosate 66.2% - Potassium Salt, acid equivalent 54%) was tested, which is not the EU representative formulation and thus article is not relevant for the risk assessment / glyphosate renewal.			
Sub-chronic exposure to Kalach 360 SL, Glyphosate-based Herbicide, induced bone rarefaction in female Wistar rats.	Hamdaoui Latifa Oudadesse Hassane; Lefevre Bertrand Mahmoud Asma Naifer Manel; Ayadi Fatma Badraoui Riadh Rebai Tarek	Toxicology, (2020 Apr 30) Vol. 436, pp. 152412. Electronic Publication Date: 4 Mar 2020 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Non-relevant by full text	In vivo study on effects of Kalach 360 SL on ED parameters on wistar female rat at 2 different doses. Kalach 360 SL is not the EU representative formulation and thus article is not relevant for the EU glyphosate renewal. Kalach 360 SL contains POEA (polyethoxylated tallow amine) which is not permitted for use in formulated herbicidal products in the EU.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Relationship between agrochemical compounds and mammary gland development and breast cancer.	Kass Laura Gomez Ayelen L; Altamirano Gabriela A	Molecular and cellular endocrinology, (2020 May 15) Vol. 508, pp. 110789. Electronic Publication Date: 9 Mar 2020 Journal code: 7500844. E-ISSN: 1872-8057. L-ISSN: 0303-7207.	Non-relevant by full text	This very limited literature review focuses on the endocrine disrupting potential of different agrochemicals with glyphosate among them. Some relevant in vitro, in vivo and epidemiological studies assessing the effects of glyphosate on several factors related to endocrine function, are summarised. The cited monitoring studies highlight that glyphosate-based herbicides were detected in human samples (milk, urine, maternal blood), but contrary scientific papers are not cited. In vitro studies performed with relevant cell lines are presented to be affected by glyphosate. Further, in vivo studies investigating developmental parameters describe effects allegedly induced by glyphosate and are suggested to result from altered endocrine function. The literature review does not provide any new data. It only summarises existing data and states that it is not possible to distinguish if the effects are caused by the active substance glyphosate or additives in the formulation such as surfactants. Due to this statement and no new data the literature review has been classified as not relevant.			
Environmental Pollution, Oxidative Stress and Thioresin Oxide: Effects of Glyphosate, Fluoride and Electromagnetic Fields on Mitochondrial Dysfunction in Carcinogenesis, Atherogenesis and Aging.	McCully Kilmer S	Annals of clinical and laboratory science, (2020 May) Vol. 50, No. 3, pp. 408-411. Journal code: 0410247. E-ISSN: 1550-8080. L-ISSN: 0091-7370.	Non-relevant by full text	No experimental set up is used to investigate glyphosate toxicity. Therefore, it cannot provide new information. A very limited toxicological evaluation of glyphosate fluoride and electromagnetic fields is described based on selected literature, very specific endpoints and not specifying the compound (glyphosate as active ingredient or formulation) which was used in the studies that are cited. This review is considered not relevant.			
Mucosal-associated invariant T-Cell (MAIT) activation is altered by chlorpyrifos- and glyphosate-treated commensal gut bacteria.	Mendler, Anne; Geier, Florian; Haange, Sven-Bastiaan; Pierzchalski, Arkadiusz; Krause, Jannike Lea; Nijenhuis, Ivonne; Froment, Jean; Jehmlich, Nico; Berger, Urs; Ackermann, Grit; Rolle-Kampczyk, Ulrike; von Bergen, Martin; Herberth, Gunda [Reprint Author]	Journal of Immunotoxicology, (JAN 1 2020) Vol. 17, No. 1, pp. 10-20. http://www.tandfonline.com/toc/jim20 /. ISSN: 1547-691X. E-ISSN: 1547-6901.	Non-relevant by full text	Gut microbiome (Escherichia coli, Bifidobacterium adolescentis and Lactobacillus reuteri) were exposed to different concentrations of a glyphosate formulation. Peripheral blood mononuclear cells (PBMCs) obtained from human volunteers were then stimulated with either pesticide-treated or non-treated bacteria (B. adolescentis or L. reuteri). Untreated E. coli were added later. MAIT cells were identified with flow cytometry and riboflavin and folate contents were measured using LC-MS/MS and electroluminescence immunoassay, respectively. A proteomic analysis was performed in E. coli. In conclusion, glyphosate might alter bacterial metabolism potentially leading altered inflammatory immune responses. A formulation of glyphosate is tested in vitro. The article is excluded as in vitro testing of glyphosate formulations produce surfactant induced cytotoxicity that is not representative for glyphosate or relevant of human in vivo exposure scenarios. Further PBMCs instead of MAIT cells derived from gut were used.			
Effect of glyphosate (GLP) induced toxicity on body weights and gross pathology: ameliorative effect of ascorbic acid (AA) in wistar rats	Namratha, M. Lakshmi; Lakshman, M.; Jeevanalatha, M.; Kumar, B. Anil	International Journal of Current Microbiology and Applied Sciences, (2019) Vol. 8, No. 10, pp. 1486-1493. CODEN: IJCMO9. ISSN: 2319-7706.	Non-relevant by full text	Roundup® (41%) procured in India is not the EU representative formulation (the composition and surfactant system differs from the EU representative formulation), therefore the article is not relevant for the EU glyphosate renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticides used in Europe and autism spectrum disorder risk: can novel exposure hypotheses be formulated beyond organophosphates, organochlorines, pyrethroids and carbamates? - A systematic review.	Ongono Jeanne Sandrine Beranger Remi Baghdadli Amaria Mortamais Marion	Environmental research, (2020 Aug) Vol. 187, pp. 109646. Electronic Publication Date: 12 May 2020 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Non-relevant by full text	Review on potential role of neuro- and thyrotoxic pesticides authorized in Europe other than those widely studied (i.e. OCs, OPs, pyrethroids and carbamates) in the risk of ASD in children or ASD behavioral phenotypes in rodents. This publication is very theoretical and it relies on the interpretation of anxiety like behaviour seen in mice (but not in rats) and the extrapolation of this to humans. Also the paper only identifies a "potential link", there is no actual exposure driven observations in humans. Therefore the publication is considered as not relevant.			
Chemoprotective potentials of selected dietary supplements in glyphosate-based herbicide-induced nephrotoxicity and dyslipidemia in albino wistar rats	Onyekachi, Ujowundu Cosmas; Onyinyechukwu, Ajaegbo Eberechukwu; Ntite, Ujowundu Favour; Anna, Okorie Amka; Onyeka, Onyemuche Shadrack; Ifeanyi, Nwajagu Anthony; Oluchi, Njoku Mryana	Asian Journal of Biological Sciences, (2019) Vol. 12, No. 2, pp. 320-327. CODEN: AJBSDP. ISSN: 1996-3351.	Non-relevant by full text	Intraperitoneal injection with formulated product containing surfactant is not relevant to real life exposure scenarios. Environmental fate, metabolism and pharmaco-kinetics for glyphosate active ingredient versus surfactants are very different. Given the direct systemic exposure, these data are considered irrelevant to livestock and human health risk assessments.			
Glyphosate exposure exacerbates the dopaminergic neurotoxicity in the mouse brain after repeated administration of MPTP.	Pu Yaoyu; Chang Lijia; Qu Youge; Wang Siming; Tan Yunfei; Wang Xingming; Zhang Jiancheng Hashimoto Kenji	Neuroscience letters, (2020 Jun 21) Vol. 730, pp. 135032. Electronic Publication Date: 7 May 2020 Journal code: 7600130. E-ISSN: 1872-7972. L-ISSN: 0304-3940.	Non-relevant by full text	This in vivo study investigated the potential of Roundup Maxload to cause parkinson's disease. Roundup Maxload (48% w/v, potassium salt), 52% other ingredients such as water and surfactants), is not the EU representative formulation, therefore the article is not relevant for the risk assessment / glyphosate renewal.			
Maternal glyphosate exposure causes autism-like behaviors in offspring through increased expression of soluble epoxide hydrolase.	Pu Yaoyu; Chang Lijia; Qu Youge; Wang Siming; Zhang Kai; Xiong Zhongwei; Zhang Jiancheng; Tan Yunfei; Wang Xingming; Fujita Yuko; Ishima Tamaki; Hashimoto Kenji Yang Jun; Wang Debin; Hwang Sung Hee; Hammock Bruce D	Proceedings of the National Academy of Sciences of the United States of America, (2020 May 26) Vol. 117, No. 21, pp. 11753-11759. Electronic Publication Date: 12 May 2020 Journal code: 7505876. E-ISSN: 1091-6490. L-ISSN: 0027-8424. Report No.: PMC-PMC7260984.	Non-relevant by full text	In this in vivo study one concentration of Roundup Maxload was used to dose pregnant mice in drinking water to investigate the risk for autism spectrum disorder in their offspring. Roundup Maxload (48% w/v, potassium salt, 52% other ingredients such as water and surfactants), is not the EU representative formulation, therefore the article is not relevant for the risk assessment / glyphosate renewal.			
Functionality and DNA-damage properties of blood cells in lactating cows exposed to glyphosate contaminated feed at different feed energy levels.	Schnabel Karina; Frahm Jana; Meyer Ulrich; Danicke Sven Schmitz Rolf; Breves Gerhard	Archives of animal nutrition, (2020 Apr) Vol. 74, No. 2, pp. 87-106. Electronic Publication Date: 5 Feb 2020 Journal code: 101222433. E-ISSN: 1477-2817. L-ISSN: 1477-2817.	Non-relevant by full text	The formulation tested is not the EU representative formulation (Roundup Record (007525-60/MOT), Monsanto, AgrarDeutschland GmbH (Düsseldorf, Germany) was used as water-soluble granulate, containing 720 g GL/kg as an active ingredient.) therefore not relevant for the EU risk assessment / glyphosate renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Determination of acute oral toxicity of glyphosate isopropylamine salt in rats.	Turkmen Ruhi Dogan Ilkay	Environmental science and pollution research international, (2020 Jun) Vol. 27, No. 16, pp. 19298-19303. Electronic Publication Date: 20 Jan 2020 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	The glyphosate formulation Knockdown 48 SL, which has been marketed by Safa Tarım Inc. in Turkey, is not the EU representative formulation therefore the publication is not relevant for the EU risk assessment / glyphosate renewal.			
Glyphosate and non-hodgkin lymphoma: no causal relationship	Barukcic, Ilija	Journal of Drug Delivery and Therapeutics (2020), 10(1Suppl.), 6-29 CODEN: JDDTAO; ISSN: 2250-1177 URL: http://jddtonline.info/index.php/jddt/index	Non-relevant by full text	Review article - the method did not follow accepted epidemiologic practice and the methodology was very uncertain.			
Urinary glyphosate biomonitoring of sprayers in vegetable farm in Thailand	Bootsikeaw, Sasivimol (Reprint); Kongtip, Pornpimol; Nankongnab, Noppanun; Chantanakul, Suttinun Kongtip, Pornpimol; Nankongnab, Noppanun Sujirarat, Dusit Mahaboonpeeti, Redeerat Khangkhun, Phanthawee Woskie, Susan	HUMAN AND ECOLOGICAL RISK ASSESSMENT, (29 2020 JUL 2020) . ISSN: 1080-7039.	Non-relevant by full text	This is an exposure study conducted in Thailand. The study aimed to measure glyphosate exposure concentrations through inhalation, dermal contact, and urinary glyphosate concentrations among 43 vegetable farmers. However, use of test item is unclear - no comment on how workers in this study were exposed, neither by what test item, nor the amount, time, frequency etc. The article is lacking important information, cannot be used in risk assessment, and is therefore not relevant.			
Contrasting norms on the use of evidence in risk assessment: the controversy surrounding the carcinogenicity of glyphosate.	Bozzini, E.	Health, Risk & Society (2020), Volume 22, Number 3/4, pp. 197-213 ISSN: 1369-8575 DOI: 10.1080/13698575.2020.1777946 Published by: Routledge, Abingdon URL (Availability): https://www.tandfonline.com/doi/pdf/10.1080/13698575.2020.1777946?redirect=1	Non-relevant by full text	The article discusses differences in the outcome of risk assessment by IARC and EFSA using glyphosate as example. On the basis of the glyphosate case study, the article discusses advantages and shortcomings of different procedural norms for the selection and evaluation of scientific evidence, and their implications for the overall quality of risk assessments. The article is not relevant as this is an opinion article where no new data is provided that can be used for risk assessment. The article proves no new data.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Human Biomonitoring of Glyphosate Exposures: State-of-the-Art and Future Research Challenges.	Connolly Alison; Koch Holger M Connolly Alison; Coggins Marie A	Toxics, (2020 Aug 18) Vol. 8, No. 3. Electronic Publication Date: 18 Aug 2020 Journal code: 101639637. E-ISSN: 2305-6304. L-ISSN: 2305-6304. Report No.: PMC-PMC7560361.	Non-relevant by full text	Review on studies that use human biomonitoring to measure urinary glyphosate and AMPA in occupationally and non-occupationally exposed population. Overall objective of the publication is to evaluate and standardise the results of the current state-of-the-art in glyphosate exposure assessment using human biomonitoring (urine samples), to evaluate the internal glyphosate concentrations to health-based guidance values, to outline the gaps in knowledge that are still required for interpretation of human biomonitoring data (human glyphosate metabolism and excretion), and to propose recommendations for sampling strategies, all of which could inform future studies investigating population exposures to glyphosate. This article is not relevant as it only provides secondary information (scientific and regulatory reviews), no correlation to glyphosate/ glyphosate product and effects).			
Glyphosate exposure and toxicology	Duke, Stephen O.	Pest Management Science, (2020) Vol. 76, No. 9, pp. 2873. CODEN: PMSCFC. ISSN: 1526-498X.	Non-relevant by full text	Editorial opinion article providing no new data. Not relevant for the risk assessment.			
Effects of Roundup and its main component, glyphosate, upon mammalian sperm function and survival.	Nerozzi Chiara; Recuero Sandra; Yeste Marc Nerozzi Chiara; Recuero Sandra; Yeste Marc Nerozzi Chiara; Galeati Giovanna; Buccì Diego; Spinaci Marcella	Scientific reports, (20200703) Vol. 10, No. 1, pp. 11026. Electronic Publication Date: 3 Jul 2020 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC7335210.	Non-relevant by full text	Glyphosate concentration tested was not physiological (5-360 µg/mL).			
Glyphosate in Portuguese Adults - A Pilot Study.	Nova Paulo Calheiros Cristina S C Silva Margarida	Environmental toxicology and pharmacology, (2020 Nov) Vol. 80, pp. 103462. Electronic Publication Date: 2 Aug 2020 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	Publication is dealing with general pesticide exposures (not glyphosate specific). Urine samples were collected from Portuguese adults of the general population (non occupational exposure) and investigated for the presence of GLY and AMPA. Systematically available internal dose levels were calculated retrospectively.			
Pilot study evaluating inhalation and dermal glyphosate exposure resulting from simulated heavy residential consumer application of Roundup®).	Pierce Jennifer S; Roberts Benjamin; Kougias Daniel G; Comerford Chris E; Riordan Alexander S; Keeton Kara A; Reamer Heidi A; Lotter Jason T Jacobs Neva F B	Inhalation toxicology, (2020 Jul) Vol. 32, No. 8, pp. 354-367. Electronic Publication Date: 6 Sep 2020 Journal code: 8910739. E-ISSN: 1091-7691. L-ISSN: 0895-8378.	Non-relevant by full text	In this study, exposure of consumer applicants to Roundup Weed & Grass Killer Super Concentrate containing 50.2% glyphosate was monitored. However, the formulation is not the AIR5 relevant formulation containing 360 g/L and the article therefore not relevant for risk assessment.			
Pesticides and transgenerational inheritance of pathologies: Designing, analysing and reporting rodent studies.	Plewis, Ian (correspondence)	PLoS ONE, (October 2020) Vol. 15, No. 10 October. ar. e0228762. Refs: 29 E-ISSN: 1932-6203 CODEN: POLNCL	Non-relevant by full text	The article is a meta analysis of five different publications from Washington state university, analysing generational effects of pesticides (Atrazine, Vinclozolin, Methoxychlor, Permethrin and Glyphosate) on rodents. The focus of this publication is the missing statistical analysis of litter effects within the mentioned studies.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Estimating Exposure to Three Commonly Used, Potentially Carcinogenic Pesticides (Chlorolathonil, 2,4-D, and Glyphosate) Among Agricultural Workers in Canada.	Rydz Cheryl E; Larsen Kristian; Peters Cheryl E Larsen Kristian Larsen Kristian Peters Cheryl E Peters Cheryl E	Annals of work exposures and health, (2020 Dec 18) . Electronic Publication Date: 18 Dec 2020 Journal code: 101698454. E-ISSN: 2398-7316. L-ISSN: 2398-7308.	Non-relevant by full text	Publication is dealing with general pesticide exposures (not glyphosate specific). The study estimated exposure to 3 commonly used pesticides, among them glyphosate, in Canada's agricultural industry. No details on exposure, no reporting on effects related to pesticide exposure.			
A pilot study to assess inhalation exposures among sugarcane workers in Guatemala: Implications for chronic kidney disease of unknown origin.	Schaeffer, Joshua W. (correspondence); Adgate, John L.; Reynolds, Stephen J.; Butler-Dawson, Jaime; Krisher, Lyndsay; Dally, Miranda; James, Katherine A.; Newman, Lee S. Schaeffer, Joshua W. (correspondence); Reynolds, Stephen J. Butler-Dawson, Jaime; Krisher, Lyndsay; Dally, Miranda; James, Katherine A.; Jaramillo, Diana; Newman, Lee S. Johnson, Richard J. James, Katherine A.; Newman, Lee S. Newman, Lee S.	International Journal of Environmental Research and Public Health, (2 Aug 2020) Vol. 17, No. 16, pp. 1-15. arn. 5708. Refs: 72 ISSN: 1661-7827; E-ISSN: 1660-4601	Non-relevant by full text	The publication was investigating the amount of glyphosate present in the environment. Monitoring without correlation to exact exposure or related effects. No information provided affecting the risk assessment.			
Biochemical and liver histological changes in rats exposed to sub-lethal dose of Uproot-pesticide and the protective potentials of nutritional supplements.	Ujowundu, Cosmas Onyekachi [Reprint Author]; Ogamanya, Kingsley Isaac; Ujowundu, Favour Ntite; Adejoh, Victoria Ojone; Iheme, Calistus I.; Igwe, Kalu Okereke	Journal of Applied Biology & Biotechnology, (JUL-AUG 2020) Vol. 8, No. 4, pp. 26-32. http://www.jabonline.in/index.php . ISSN: 2455-7005. E-ISSN: 2347-212X.	Non-relevant by full text	Intraperitoneal injection is not a preferred route of administration for an in vivo study. In addition, the publication is dealing with a glyphosate formulation Uproot containing POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Cellular injury leading to oxidative stress in acute poisoning with potassium permanganate/oxalic acid, paraquat, and glyphosate surfactant herbicide.	Wijerathna Thilini Madushanka Mohamed Fahim Gawarammana Indika Bandara Wunnapuk Klintean Dissanayake Dhammika Menike Shihana Fathima; Buckley Nicholas Allan	Environmental toxicology and pharmacology, (2020 Nov) Vol. 80, pp. 103510. Electronic Publication Date: 5 Oct 2020 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	This paper describes using the biomarker of CytoC in Acute Kidney Injury in patients who ingested pesticides, including 27 cases of formulated glyphosate ingestion. Surfactants are known to cause caustic injury, hemodynamic instability and shock. It is not surprising, therefore, to see patients develop AKI in this setting. Mitochondrial injury is not unusual in hypovolemic shock, the authors are exploring the use of CytoC as an early biomarker for predicting who will develop acute renal dysfunction. Since this is in the setting of overdose rather than occupational exposure, the paper is not relevant for the regulatory risk assessment.			
Cardiovascular damage associated with subchronic exposure to the glyphosate herbicide in Wistar rats.	Maia Fernando Cezar Cardoso; Nai Gisele Alborghetti Maia Fernando Cezar Cardoso; Porto Rebecca Andrade; Magalhaes Leticia Rocha; Chagas Pedro Henrique Nahas; Nai Gisele Alborghetti Nai Gisele Alborghetti	Toxicology and industrial health, (2021 Feb 24) pp. 748233721996578. Electronic Publication Date: 24 Feb 2021 Journal code: 8602702. E-ISSN: 1477-0393. L-ISSN: 0748-2337.	Non-relevant by full text	The publication is dealing with a glyphosate formulation Roundup Original. It is known that this formulation contains POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal. In addition, the publication does not provide any relevant information to be used in the risk assessment. There are no HCD to understand the relevance of the observed increase of fatty streaks. The conclusion of glyphosate atherogenic potential is not supported either by other correlated histopathology findings and/or appropriated biomarker of atherogenic risk.			
Perinatal exposure to low doses of glyphosate-based herbicide combined with a high-fat diet in adulthood causes changes in the jejunums of mice.	Panza S B Vargas R Balbo S L; Bonfleur M L Granzotto D C T Sant'Ana D M G Nogueira-Melo G A	Life sciences, (2021 Jun 15) Vol. 275, pp. 119350. Electronic Publication Date: 15 Mar 2021 Journal code: 0375521. E-ISSN: 1879-0631. L-ISSN: 0024-3205.	Non-relevant by full text	The publication is dealing with a glyphosate formulation Roundup Original. It is known that this formulation contains POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal.			
Could Glyphosate and Glyphosate-Based Herbicides Be Associated With Increased Thyroid Diseases Worldwide?.	Romano Renata Marino; de Oliveira Jeane Maria; Romano Marco Aurelio de Oliveira Viviane Matoso de Oliveira Isabela Medeiros Torres Yohandra Reyes Bargi-Souza Paula Martino Andrade	Frontiers in endocrinology, (2021) Vol. 12, pp. 627167. Electronic Publication Date: 19 Mar 2021 Journal code: 101555782. ISSN: 1664-2392. L-ISSN: 1664-2392. Report No.: PMC-PMC8018287.	Non-relevant by full text	This article is a review of other publications. No study developed for glyphosate in this documents. This article is not relevant for risk assessment and does not bring any new information to the renewal dossier.			
Enhanced communication of IARC Monograph findings to better achieve public health outcomes	Stewart, Bernard W.	CARCINOGENESIS, (2021 FEB 2021) Vol. 42, No. 2, pp. 159-168. ISSN: 0143-3334.	Non-relevant by full text	The article is a summary of keywords to be used to improve communication to reach public health outcomes. No study developed for glyphosate in this documents. This article is not relevant for risk assessment and does not bring any new information to the renewal dossier.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Renal tubular injury induced by glyphosate combined with hard water: the role of cytosolic phospholipase A2.	Wang Ruojing; Ding Fan; Zhang Lin; Wu Xuan; Wu Qing Chen Jing; Zhang Xiaoyan Wan Yi; Hu Jianying	Annals of translational medicine, (2021 Jan) Vol. 9, No. 2, pp. 130. Journal code: 101617978. ISSN: 2305-5839. L-ISSN: 2305-5839. Report No.: PMC-PMC7867956.	Non-relevant by full text	This publication suggests renal tubular injury induced by glyphosate based formulation containing POEA surfactant combined with hard water. However, these data were obtained at excessively high doses of POEA surfactant, which are not relevant to the EU level regulatory review. The lack of substantial body weight loss and potentially mortality at these exceedingly high POEA oral exposures for 90-days are not consistent with data published in the US EPA assessment for this POEA surfactant, with a NOAEL of 33 mg/kg bw/day and 39 mg/kg bw/day in males/females, respectively, and LOAEL of 99 mg/kg bw/day and 123 mg/kg bw/day in males/females, respectively (US EPA, 2009. Alkyl amine polyalkoxylates Human Health Risk Assessment, pages 58 and 59 of 94). Therefore, any findings are likely a consequence of overt toxicity to the gastrointestinal tract of treated animals. Furthermore, key study details on feed and water consumption are lacking, and as such the results are difficult to place in context relative to these key indicators of animal health.			
Study of muscle fibers of the extensor digitorum longus and soleus muscles of C57BL/6 females exposed to glyphosate during pregnancy and lactation.	Barbosa Ariadne; Oliveira Mylena Campos; Kuhn-Fraga Camila; Ribeiro Lucinea de Fatima Chasko; Balbo Sandra Lucinei; Torrejais Marcia Miranda	Einstein (Sao Paulo, Brazil), (2021) Vol. 19, pp. eAO5657. Electronic Publication Date: 13 Aug 2021 Journal code: 101281800. E-ISSN: 2317-6385. L-ISSN: 1679-4508. Report No.: PMC-PMC8328150.	Non-relevant by full text	The aim of this study was to evaluate the morphology and morphometry of the muscles extensor digitorum longus and soleus of C57BL/6 females, who were exposed to glyphosate during pregnancy and lactation. Glyphosate group presented lower weight gain during pregnancy and also lower final body weight and naso-anal length; however, the other body parameters evaluated did not present a significant difference in relation to the Control Group. Significant differences were also not observed in the analysis of muscle fibers and connective tissue. Importantly, although weight gain was measured, there were not records of feed intake for each group, which is most likely the main determinant in ascribing cause for the weight differences reported. The publication is dealing with a glyphosate formulation Roundup Original containing POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal.			
Subchronic exposure to a glyphosate-based herbicide causes dysplasia in the digestive tract of Wistar rats.	de Maria Serra Fernanda; de Azevedo Mello Fabiola; Nai Gisele Alborghetti Parizi Jose Luiz Santos; Nai Gisele Alborghetti Parizi Jose Luiz Santos; Chagas Pedro Henrique Nahas; Nai Gisele Alborghetti Odorizzi Gisele Aparecida Sales de Mello; Sato Grace Mitiko Rosati Hori; Patrao Isabela Bocardi; Nai Gisele Alborghetti Nai Gisele Alborghetti	Environmental science and pollution research international, (2021 Jun 26) . Electronic Publication Date: 26 Jun 2021 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	The publication is dealing with a glyphosate formulation Roundup Original containing POEA. The representative formulation for the glyphosate AIR5 does not contain POEA. POEA is banned in the EU. Thus the paper is not relevant to the EU glyphosate renewal.			
Toxicology and Microbiota: How Do Pesticides Influence Gut Microbiota? A Review	Giambo, Federica (Reprint) Giambo, Federica (Reprint); Teodoro, Michele; Fenga, Concettina Costa, Chiara	INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, (2021 JUN 2021) Vol. 18, No. 11.	Non-relevant by full text	This paper is a review of the literature on the influence of pesticide exposure on gut microbial. Glyphosate is mentioned in only one paragraph of the article and no information is available on the test item, the experimental conditions and the description of the results.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate Exposure during Pregnancy and Preterm Birth (More Research Is Needed).	Kogevinas Manolis	Environmental health perspectives, (2021 May) Vol. 129, No. 5, pp. 51301. Electronic Publication Date: 19 May 2021 Journal code: 0330411. E-ISSN: 1552-9924. L-ISSN: 0091-6765. Report No.: PMC-PMC8312484.	Non-relevant by full text	This is a commentary on a single published article, not original research. There is no study design or study population per se. There is no information in this commentary to evaluate the appropriateness of a study population. The conclusion of the author is that more research is needed. As such, the commentary does not contribute relevant / reliable information to the assessment of risk from glyphosate use.			
Computational modelling provides insight into the effects of glyphosate on the shikimate pathway in the human gut microbiome.	Mesnage Robin; Antoniou Michael N	Current research in toxicology, (2020 Jun 10) Vol. 1, pp. 25-33. Electronic Publication Date: 22 Apr 2020 Journal code: 101771915. E-ISSN: 2666-027X. L-ISSN: 2666-027X. Report No.: PMC-PMC8320642.	Non-relevant by full text	The publication studies the presence and activity of the shikimate pathway by assessing faecal metagenomes from different datasets. There is also the reference to a previous microbiome study to understand the effects of glyphosate/glyphosate formulated product on the gut microbiota at different stages of the rat digestive tract. However, the main part of the article is focussing on the metagenomes and metatranscriptomes and not evaluating the effect on gut microbiota after exposure to glyphosate. Moreover, potential effects to gut microbiota and serum metabolome are not part of the EU risk assessments.			
Brain acetylcholinesterase (AChE) activity and liver melanomacrophage centers (MMCs) formation in Nile tilapia (<i>Oreochromis niloticus</i> L.) following exposure to glyphosate herbicide.	Ugaddan, George R.; Ocampo, Pablo P.	Asia Life Sciences, (JAN-JUN 2009) Vol. 18, No. 1, pp. 73-85. ISSN: 0117-3375.	Non-relevant by full text	Study in <i>Oreochromis niloticus</i> L. (tilapia, a cichlid fish); not a relevant species for risk assessment. It focuses on the effects of an unidentified formulation of glyphosate on fishes (Nile tilapia), the study only refers to findings based on cellular and molecular level that cannot be related to the Ecotox risk assessment.			
Exposure misclassification in studies of agricultural pesticides: Insights from biomonitoring	Acquavella, John F.; Gustin, Christophe; Alexander, Bruce H.; Mandel, Jack S.; Burns, Carol J.	Epidemiology (Jan 2006) Volume 17, Number 1, pp. 69-74, 21 refs. CODEN: EPID EY ISSN: 1044-3983 DOI: 10.1097/01.ede.0000190603.52867.22	Non-relevant by full text	A algorithm proposed by Dosemeci and colleagues to estimate lifetime average exposure intensity from questionnaire information. The algorithm was evaluated to measure urinary pesticide concentrations for farmers who applied glyphosate. Statistical analyses included nonparametric correlations, assessment of categorical agreement, and categorical evaluation of exposure distributions.			
Combined effects of repeated administration of Bretmont Wipeout (glyphosate) and Ultrazin (atrazine) on testosterone, oxidative stress and sperm quality of Wistar rats.	Abarikwu Sunny O Akiri Oghenetega F; Durojaiye Mojisola A; Adenike Alabi	Toxicology mechanisms and methods, (2015 Jan) Vol. 25, No. 1, pp. 70-80. Journal code: 101134521. E-ISSN: 1537-6524. L-ISSN: 1537-6516.	Non-relevant by full text	Formulation provided to Wistar rats via oral gavage in corn oil.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Characterization of human cytochrome P450 induction by pesticides	Abass, Khaled; Lamsa, Virpi; Reponen, Petri; Kublbeck, Jenni; Honkakoski, Paavo; Mattila, Sampo; Pelkonen, Olavi; Hakkola, Jukka	Toxicology, (2012) Vol. 294, No. 1, pp. 17-26. CODEN: TXYAC. ISSN: 0300-483X.	Non-relevant by full text	No significant glyphosate related effects.			
The inhibition of major human hepatic cytochrome P450 enzymes by 18 pesticides: Comparison of the N-in-one and single substrate approaches	Abass, Khaled; Pelkonen, Olavi	Toxicology In Vitro, (2013) Vol. 27, No. 5, pp. 1584-1588. CODEN: TIVIEQ. ISSN: 0887-2333.	Non-relevant by full text	Glyphosate not mentioned in the paper.			
Cytogenetic study on the effect of bentazon and glyphosate herbicide on mice.	Aboukila, R. S.; Hemeda, S. A.; El-Nahas, A. F.	Alexandria Journal of Veterinary Sciences (2014), Volume 41, pp. 95-101, 27 refs. ISSN: 1110-2047 Published by: Faculty of Veterinary Medicine, Alexandria University, Behira URL (Availability): http://www.scopemed.org/fulltextpdf.php?mno=157875	Non-relevant by full text	This publication is considered not relevant because a glyphosate formulation (Gialica) was used instead of glyphosate and the route of administration was intraperitoneal injection which is an inappropriate route of administration for the occupational and food risk assessment of glyphosate.			
Effects of AMPA and clomethiazole on spreading depression cycles in the rat neocortex in vivo	Addae, Jonas I.; Ali, Nakisha; Stone, Trevor W.	European Journal of Pharmacology (2011), 653(1-3), 41-46 CODEN: EJPHAZ; ISSN: 0014-2999	Non-relevant by full text	The article is investigating AMPA Receptor with drugs applied i.p. and topically.			
Neonatal exposure to a glyphosate-based herbicide alters the histofunctional differentiation of the ovaries and uterus in lambs.	Alarcon Ramiro; Ingaramo Paola I; Milesi Mercedes M; Varayoud Jorgelina; Munoz-de-Toro Monica Rivera Oscar E; Dioguardi Gisela H Repetti Maria R; Demonte Luisina D Luque Enrique H	Molecular and cellular endocrinology, (2019)215 Vol. 482, pp. 45-56. Electronic Publication Date: 11 Dec 2018 Journal code: 7500844. E-ISSN: 1872-8057. L-ISSN: 0303-7207.	Non-relevant by full text	Formulation tested (Roundup Full II, Argos SRL, Santa Fe, Argentina; 54 g/100 mL glyphosate)			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Postnatal exposure to a glyphosate-based herbicide modifies mammary gland growth and development in Wistar male rats.	Altamirano Gabriela A; Gomez Ayelen L; Munoz-de-Toro Monica Delconte Melisa B; Ingaramo Paola I; Luque Enrique H; Bosquiazzi Veronica L; Kass Laura	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2018 Aug) Vol. 118, pp. 111-118. Electronic Publication Date: 7 May 2018 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278	Non-relevant by full text	Formulation tested (Roundup FULL II, potassium salt; 54% a.e.)			
Effect of the herbicide Roundup on the activity of Glycosidases of invertebrates and juvenile fish.	Aminov, A. I. [Reprint Author]; Golovanova, I. L.; Filippov, A. A.	Inland Water Biology, (OCT 2013) Vol. 6, No. 4, pp. 351-356. http://www.springerlink.com/content/120984/ . ISSN: 1995-0829. E-ISSN: 1995-0837.	Non-relevant by full text	Formulation tested in vitro (Roundup, produced and packaged by ZAO Avgust, Russia; 36% glyphosate).			
Cardiotoxicity of Pesticides: Are Africans at Risk?	Anakwue, Raphael (Reprint)	CARDIOVASCULAR TOXICOLOGY, (APR 2019) Vol. 19, No. 2, pp. 95-104. ISSN: 1530-7905.	Non-relevant by full text	Review article with no new data.			
The In Vitro Impact of the Herbicide Roundup on Human Sperm Motility and Sperm Mitochondria.	Anifandis George; Dafopoulos Konstantinos; Daponte Alexandros; Kachpani Elli; Messini Christina I; Amiridis George; Dovolou Eleni; Gavriil Eleftherios; Gorgogietas Vyrion; Mamuris Zissis; Psarra Anna-Maria G; Vassiou Katerina	Toxics, (2017 Dec 21) Vol. 6, No. 1. Electronic Publication Date: 21 Dec 2017 Journal code: 101639637. E-ISSN: 2305-6304. L-ISSN: 2305-6304. Report No.: PMC-PMC5874775.	Non-relevant by full text	Formulation tested in vitro (Roundup, not characterized).			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Corrigendum to: A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment (Critical Reviews in Toxicology, (2016), 46, sup1, (3-20), 10.1080/10408444.2016.1214677).	Williams et al.	Critical Reviews in Toxicology, (2018) , ISSN: 1040-8444; E-ISSN: 1547-6898 CODEN: CRTXB2	Non-relevant by full text	Corrigendum to paper updating acknowledgements and author conflicts of interest.			
Erratum to: Transcriptome profile analysis reflects rat liver and kidney damage following chronic ultra-low dose Roundup exposure (Environmental Health: A Global Access Science Source (2015) 14:70 DOI: 10.1186/s12940-015-0056-1).	Anon.	Environmental Health: A Global Access Science Source, (23 Mar 2017) Vol. 16, No. 1. am. 28. E-ISSN: 1476-069X	Non-relevant by full text	This is erratum to Mesnage et al., Environmental health (2015), Vol. 14, article No. 70.			
Pesticide Exposure in Children (vol 130, pg e1757, 2012).	Anon.	Pediatrics, (MAY 2013) Vol. 131, No. 5, pp. 1013. CODEN: PEDIAU. ISSN: 0031-4005. E-ISSN: 1098-4275.	Non-relevant by full text	No glyphosate data generated/presented.			
Glyphosate does not substitute for glycine in proteins of actively dividing mammalian cells.	Antoniou Michael N; Mesnage Robin; Biserni Martina Nicolas Armel; Rao Francesco V; Martin Cristina Vazquez Nicolas Armel Rao Francesco V	BMC research notes, (2019 Aug 08) Vol. 12, No. 1, pp. 494. Electronic Publication Date: 8 Aug 2019 Journal code: 101462768. E-ISSN: 1756-0500. L-ISSN: 1756-0500. Report No.: PMC-PMC6686468.	Non-relevant by full text	This publication is found not relevant because the end-point investigated (substitution of glycine by glyphosate in protein synthesis) is not appropriate for the risk assessment of glyphosate.			
Effect of pesticide exposure on immunological, hematological and biochemical parameters in Thai orchid farmers-a cross-sectional study	Aroonvilairat, Soraya; Kespichayawattana, Wannapa; Sornprachum, Thiwaree; Chaisuriya, Papada; Siwadune, Taweeratana; Ratanabanangkoon, Kavi	International Journal of Environmental Research and Public Health, (2015) Vol. 12, No. 6, pp. 5846-5861. CODEN: IJERGQ. ISSN: 1660-4601.	Non-relevant by full text	This is a general pesticides paper and not specific to glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Cytotoxicity and genotoxicity of some agropesticides used in Southern Africa	Asita, A. O.; Hatane, B. H.	Journal of Toxicology and Environmental Health Sciences, (2012) Vol. 4, No. 10, pp. 175-184. CODEN: JTEHA3. ISSN: 2006-9820.	Non-relevant by full text	Formulation tested in vitro (Wipe-out, Kombat (Pty) Ltd, South Africa; 360 g/L glyphosate). Tested a plant species with a herbicide for adverse end-points; not relevant to human health end-points.			
The oxidative damage and inflammation caused by pesticides are reverted by lipoic acid in rat brain.	Astiz Mariana de Alaniz Maria J T; Marra Carlos Alberto	Neurochemistry international, (2012 Dec) Vol. 61, No. 7, pp. 1231-41. Electronic Publication Date: 17 Sep 2012 Journal code: 8006959. E-ISSN: 1872-9754. L-ISSN: 0197-0186.	Non-relevant by full text	in vivo administration via intraperitoneal injection			
Pesticide-induced decrease in rat testicular steroidogenesis is differentially prevented by lipoate and tocopherol.	Astiz Mariana Hurtado de Catalfo Graciela E; Garcia Marcela N; Galletti Susana M; Errecalde Ana L; de Alaniz Maria J T; Marra Carlos A	Ecotoxicology and environmental safety, (2013 May) Vol. 91, pp. 129-38. Electronic Publication Date: 7 Mar 2013 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	in vivo administration via intraperitoneal injection			
Ameliorative effect of resveratrol on testicular oxidative stress, spermatological parameters and DNA damage in glyphosate-based herbicide-exposed rats.	Avdatek F Birdane Y O; Turkmen R Demirel H H	Andrologia, (2018 Sep) Vol. 50, No. 7, pp. e13036. Electronic Publication Date: 14 May 2018 Journal code: 0423506. E-ISSN: 1439-0272. L-ISSN: 0303-4569.	Non-relevant by full text	Glyphosate based formulation tested (Knockdown 48 SL) which is not comparable to the EU renewal.			
Protective effect of N-acetylcysteine on testicular oxidative damage, spermatological parameters and DNA damage in glyphosate-based herbicide-exposed rats.	Avdatek, F.; Tuerkmen, R.; Demirel, H. H.; Birdane, Y. O.	Kocatepe Veterinary Journal (2018), Volume 11, Number 3, pp. 292-300, 45 refs. ISSN: 1308-1594 Published by: Afyon Kocatepe University Faculty of Veterinary Medicine, Afyonkarahisar URL (Availability): http://dergipark.gov.tr/download/article-file/541601	Non-relevant by full text	Formulation tested (Knockdown 48 SL, Turkey) which is not comparable to the EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Environmental exposure to glyphosate and reproductive health impacts in agricultural population of Argentina.	Avila-Vazquez, M.; Difilippo, F. S.; MacLean, B.; Maturano, E.; Etchegey, A.	Journal of Environmental Protection (2018), Volume 9, Number 3, pp. 241-253, 36 refs. ISSN: 2152-2197 DOI: 10.4236/jep.2018.93016 Published by: Scientific Research Publishing, Irvine URL (Availability): https://www.scirp.org/Journal/PaperInformation.aspx	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because the general population followed was exposed to multiple environmental factors making it impossible to establish a causal relationship between exposure to glyphosate and reproductive disorders.			
Histopathological examination of the liver and gills of <i>Clarias gariepinus</i> treated with glyphosate.	Ayanda, O. I.; Egbamuno, E. A.	Environmental Research Journal (2012), Volume 6, Number 3, pp. 228-234, 37 refs. ISSN: 1994-5396 DOI: 10.3923/erj.2012.228.234 Published by: Medwell Publishing, Faisalabad URL (Availability): http://www.medwelljournals.com/abstract/?doi=erj.2012.228.234	Non-relevant by full text	Formulation tested in aquatic species (Roundup 480 mg/L isopropanol salt; 360 g/L a.e.). Effects clearly attributable to surfactant.			
Izvesce Centra za kontrolu otrovanja za razdoblje od 1. siječnja do 31. prosinca 2018	Babic, Zeljka; Kovacic, Jelena; Turk, Rajka [Note: paper lists	Arhiv Za Higijenu Rada i Toksikologiju, Vol. 70, No. 1, pp. 69-73, 20190101 ISSN: 0004-1254 E-ISSN: 1848-6312 Published by: Institute for Medical Research and Occupational Health, Zagreb	Non-relevant by full text	GBH mentioned once and no glyphosate specific data included			
Effect of quercetin against Roundup and/or fluoride induced biochemical alterations and lipid peroxidation in rats	Bader, M. A.; Sultana, M.; Raina, R.; Prawez, S.; Pankaj, N. K.; Reshi, R. N.; Ahanger, R. R.; Dar, M. Y.	International Journal of Pharmaceutical Sciences Review and Research, (2015) Vol. 34, No. 2, pp. 168-175. CODEN: IJPSRR. ISSN: 0976-044X.	Non-relevant by full text	Excessively high 28-day repeat dose at 500 mg/kg/day glyphosate based herbicide and is therefore not comparable to the EU glyphosate renewal.			
Learning and memory impairments associated to acetylcholinesterase inhibition and oxidative stress following glyphosate based-herbicide exposure in mice.	Bali Yassine Ait; Kaikai Nour-Eddine; Ba-M'hamed Saadia Bennis Mohamed	Toxicology, (2019 Mar 01) Vol. 415, pp. 18-25. Electronic Publication Date: 22 Jan 2019 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Non-relevant by full text	Formulation tested (Roundup herbicide (glyphosate concentration 360g/l IPA salt, Monsanto) which contains a surfactant not present in the representative glyphosate used in the EU renewal process.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate toxicity in animals.	Bates, Nicola [Reprint Author]; Edwards, Nick	Clinical Toxicology, (DEC 2013) Vol. 51, No. 10, pp. 1243. http://informahealthcare.com/journal/cx . ISSN: 1556-3650. E-ISSN: 1556-9519.	Non-relevant by full text	Correspondance adds no new data on human health endpoints			
The possible link between autism and glyphosate acting as glycine mimetic - a review of evidence from the literature with analysis	Beecham, J. E.; Seneff, Stephanie	Journal of Molecular and Genetic Medicine, (2015) Vol. 9, No. 4, pp. 1000197/1-1000197/16. CODEN: JMGMD. ISSN: 1747-0862.	Non-relevant by full text	This publication is considered not relevant for glyphosate risk assessment because it is not based on experimental work and no epidemiologic methodology was followed.			
Pesticides alter ion transport across frog (Pelophylax kl. esculentus) skin	Bellantuono, Vito; Cassano, Giuseppe; Lippe, Claudio	Chemistry in ecology (2014), Volume 30, Number 7, pp. 602-610 ISSN: 1029-0370 Published by: Taylor & Francis Source Note: 2014 Oct. 3, v. 30, no. 7	Non-relevant by full text	End-point not relevant to human health risk assessment in the EU renewal.			
DNA damage induced by exposure to pesticides in children of rural areas in Paraguay	Benitez Leite, Stela (Reprint) Benitez Leite, Stela (Reprint) Franco de Diana, Deidamia Mercedes; Segovia Abreu, Jaime Alfredo; Samaniego Royg, Maria Jose; Thielmann Arbo, Boris Alexei Santiago Avalos, Domingo Almada Denis, Marta; Coronel Ovelar, Cristina	INDIAN JOURNAL OF MEDICAL RESEARCH, (SEP 2019) Vol. 150, No. 3, pp. 290-296. ISSN: 0971-5916.	Non-relevant by full text	No evaluation of the glyphosate used as part of the study. Study provides a comparison of children living near transgenic soybean fields to a control group near crops managed with biological controls.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Multiple pesticide analysis in hair samples of pregnant French women: Results from the ELFE national birth cohort.	Beranger, Remi [Reprint Author]; Hardy, Emilie M.; Dexet, Celia; Guldner, Laurence; Zaros, Cecile; Nougadere, Alexandre; Metten, Marie-Astrid; Chevrier, Cecile; Appenzeller, Brice M. R.	Environment International, (NOV 2018) Vol. 120, pp. 43-53. http://www.journals.elsevier.com/environment-international/#description . CODEN: ENVIVD. ISSN: 0160-4120. E-ISSN: 1873-6750.	Non-relevant by full text	No data presented on glyphosate, therefore not relevant for the EU renewal.			
Occupational exposure to pesticides and thyroid function in Brazilian soybean farmers.	Bernieri, Tanandra; Rodrigues, Dabiana; Barbosa, Isadora Randon; Ardenghi, Patricia Grolli; Basso da Silva, Luciano (correspondence) Basso da Silva, Luciano (correspondence)	Chemosphere, (March 2019) pp. 425-429. Refs: 37 ISSN: 0045-6535; E-ISSN: 1879-1298 CODEN: CSMHAF	Non-relevant by full text	General pesticide exposures, not glyphosate specific, therefore not relevant for the EU renewal.			
Effect of pesticide exposure on total antioxidant capacity and biochemical parameters in Brazilian soybean farmers	Bernieri, Tanandra; Rodrigues, Dabiana; Randon Barbosa, Isadora; Perassolo, Magda Susana; Grolli Ardenghi, Patricia; Basso da Silva, Luciano	Drug and Chemical Toxicology (1977) (2019) Ahead of Print CODEN: DCTODJ; ISSN: 0148-0545	Non-relevant by full text	General pesticide exposure biomonitoring study, not glyphosate specific and therefore not relevant for the EU renewal.			
Effective attenuation of glyphosate-induced oxidative stress and granulosa cell apoptosis by vitamins C and E in caprines.	Bhardwaj Jitender Kumar; Mittal Meenu; Saraf Priyanka	Molecular reproduction and development, (2019)100 Vol. 86, No. 1, pp. 42-52. Electronic Publication Date: 26 Nov 2018 Journal code: 8903333. E-ISSN: 1098-2795. L-ISSN: 1040-452X.	Non-relevant by full text	Glyphosate based herbicide tested with in vitro test system. As this formulation is not the representative formulation used in the EU renewal process, it is not relevant.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Respiratory condition of family farmers exposed to pesticides in the state of Rio de Janeiro, Brazil.	Buralli, Rafael J. (correspondence); Ribeiro, Helena Mauad, Thais; Amato-Lourenco, Luis F. Salge, Joao M. Diaz-Quijano, Fredi A. Leao, Renata S. Marques, Rejane C. Silva, Daniele S.; Guimaraes, Jean Remy Davee	International Journal of Environmental Research and Public Health, (8 Jun 2018) Vol. 15, No. 6. am. 1203. Refs: 49 ISSN: 1661-7827; E-ISSN: 1660-4601	Non-relevant by full text	General pesticide exposures, not glyphosate specific, therefore not relevant for the EU renewal.			
Evaluation of Stage-Dependent Genotoxic Effect of Roundup® (Glyphosate) on Caiman latirostris Embryos.	Burella Pamela Mariana; Simoniello Maria Fernanda; Poletta Gisela Laura Burella Pamela Mariana; Poletta Gisela Laura Poletta Gisela Laura	Archives of environmental contamination and toxicology, (2017 Jan) Vol. 72, No. 1, pp. 50-57. Electronic Publication Date: 22 Oct 2016 Journal code: 0357245. E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Non-relevant by full text	Glyphosate based herbicide tested on reptiles. End-point and species not relevant to EU annex I renewal.			Y
The health consequences of aerial spraying illicit crops: The case of Colombia.	Camacho Adriana; Mejia Daniel	Journal of health economics, (2017 Jul) Vol. 54, pp. 147-160. Electronic Publication Date: 13 May 2017 Journal code: 8410622. E-ISSN: 1879-1646. L-ISSN: 0167-6296.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is too general and no specific epidemiological method was followed to establish an association between the application of glyphosate and disease outcome.			
Evaluation of herbicide glyphosate effects in the fish Prochilodus lineatus using chromosome aberration test.	Caramello, C. S.; Jorge, M. J.; Jorge, N. L.; Jorge, L. C.	Revista Veterinaria (2017), Volume 28, Number 1, pp. 65-68, 28 refs. ISSN: 1668-4834 Published by: Facultad de Ciencias Veterinarias de la Universidad Nacional del Nordeste (UNNE), Corrientes URL (Availability): http://www.vet.unne.edu.ar/uploads/revistas	Non-relevant by full text	Formulation tested (Roundup Full II), not representative for the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
An acute exposure to glyphosate-based herbicide alters aromatase levels in testis and sperm nuclear quality.	Cassault-Meyer Estelle; Gress Steeve; Seralini Gilles-Eric Galeraud-Denis Isabelle	Environmental toxicology and pharmacology, (2014 Jul) Vol. 38, No. 1, pp. 131-40. Electronic Publication Date: 27 May 2014 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because a glyphosate formulation (Roundup Grand Travaux Plus) was tested instead of glyphosate.			
Novel adjuvants for high load glyphosate formulations	Castelani, P.; Cella, R.; Jorge, A.	SOFW Journal, (2013) Vol. 139, No. 6, pp. 30-34,36. CODEN: SOFJEE. ISSN: 0942-7694.	Non-relevant by full text	Formulation chemistry paper and therefore not relevant to the EU renewal of glyphosate.			
Developmental exposure to glyphosate-based herbicide and depressive-like behavior in adult offspring: Implication of glutamate excitotoxicity and oxidative stress.	Cattani Daiane; Cesconetto Patricia Acordi; Parisotto Eduardo Benedetti; Rieg Carla Elise Heinz Tavares Mauren Kruger; Wendt Nestor Cubas; Razzera Guilherme De Oliveira Paulo Alexandre; Prediger Rui Daniel Schroder Leite Marina Concli Filho Danilo Wilhelm	Toxicology, (20170715) Vol. 387, pp. 67-80. Electronic Publication Date: 13 Jun 2017 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Non-relevant by full text	Formulation tested (Roundup Original, Brazil, 360 g/L glyphosate), not-representative for the renewal.			
Mechanisms underlying the neurotoxicity induced by glyphosate-based herbicide in immature rat hippocampus: involvement of glutamate excitotoxicity.	Cattani Daiane; de Liz Oliveira Cavalli Vera Lucia; Heinz Rieg Carla Elise; Domingues Juliana Tonietto; Dal-Cim Tharine; Tasca Carla Ines; Mena Barreto Silva Fatima Regina Zamoner Ariane	Toxicology, (2014 Jun 05) Vol. 320, pp. 34-45. Electronic Publication Date: 15 Mar 2014 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Non-relevant by full text	Formulation tested (Roundup Original, Brazil, 360 g/L glyphosate), not-representative for the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Occupational exposure to pesticides in family agriculture and the oxidative, biochemical and hematological profile in this agricultural model	Cattelan, Marcia Denise Pavanelo; Maurer, Patricia; Garcia, Fernandez; Berro, Lyana Feijoo; Machado, Michel Mansur; Manfredini, Vanusa; Piccoli, Jacqueline da Costa Escobar	Life Sciences, (2018) Vol. 203, pp. 177-183. CODEN: LIFSAK. ISSN: 0024-3205.	Non-relevant by full text	General pesticide exposures, not glyphosate specific and thus not relevant to the EU renewal of glyphosate.			
Protective effect of Ginkgo biloba L. leaf extract against glyphosate toxicity in Swiss albino mice.	Cavusoglu Kultigin Yapar Kursad; Oruc Ertan; Yalcin Emine	Journal of medicinal food, (2011 Oct) Vol. 14, No. 10, pp. 1263-72. Electronic Publication Date: 22 Aug 2011 Journal code: 9812512. E-ISSN: 1557-7600. L-ISSN: 1096-620X.	Non-relevant by full text	Single dose administration intraperitoneally as well as the protective effect of a Ginkgo biloba extract. This is not representative of glyphosate exposure and therefore not relevant to the renewal.	Y		
Redox imbalance caused by pesticides: a review of OPENTOX-related research.	Cermak Ana Marija Marjanovic; Pavicic Ivan; Zeljezic Davor	Arhiv za higijenu rada i toksikologiju, (2018 Jun 01) Vol. 69, No. 2, pp. 126-134. Journal code: 0373100. E-ISSN: 1848-6312. L-ISSN: 0004-1254.	Non-relevant by full text	A review article of in vitro studies with no new data provided.			
Glyphosate commercial formulation causes cytotoxicity, oxidative effects, and apoptosis on human cells: differences with its active ingredient.	Chaufan Gabriela Coalova Isis; Rios de Molina Maria Del Carmen	International journal of toxicology, (2014 Jan-Feb) Vol. 33, No. 1, pp. 29-38. Electronic Publication Date: 16 Jan 2014 Journal code: 9708436. E-ISSN: 1092-874X. L-ISSN: 1091-5818.	Non-relevant by full text	No effects for glyphosate and AMPA, only with formulation tested in vitro system. Data not biologically relevant.			
Glyphosate affects the spontaneous motoric activity of intestine at very low doses - in vitro study.	Chlopecka Magdalena; Dziekan Natalia; Karlik Wojciech Mendel Marta	Pesticide biochemistry and physiology (2014 Jul) Vol. 113, pp. 25-30. Electronic Publication Date: 24 Jun 2014 Journal code: 1301573. E-ISSN: 1095-9939. L-ISSN: 0048-3575.	Non-relevant by full text	A novel ex-vivo model not relevant to the EU renewal of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The effect of glyphosate-based herbicide Roundup and its co-formulant, POEA, on the motoric activity of rat intestine - In vitro study.	Chlopecka Magdalena; Dziekan Natalia; Karlik Wojciech; Mendel Marta	Environmental toxicology and pharmacology, (2017 Jan) Vol. 49, pp. 156-162. Electronic Publication Date: 26 Dec 2016 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	Formulation and mixtures of glyphosate and surfactant tested in vitro (Roundup ULTRA 170 SL; 170 g isopropylamine salt/L). Data not biologically relevant to the renewal.			
A glyphosate-based herbicide induces necrosis and apoptosis in mature rat testicular cells in vitro, and testosterone decrease at lower levels.	Clair Emilie; Mesnage Robin; Traverset Carine; Seralini Gilles-Eric	Toxicology in vitro : an international journal published in association with BIBRA, (2012 Mar) Vol. 26, No. 2, pp. 269-79. Electronic Publication Date: 19 Dec 2011 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because a glyphosate formulation (Roundup Bioforce) was used instead of glyphosate for in vitro testing.			
Chronic kidney disease in Nicaraguan sugarcane workers: A historical, medical, environmental analysis and ethical analysis.	Clark, Peter A.; Chowdhury, Junad; Chan, Benjamin; Radigan, Nicholas	Internet Journal of Third World Medicine, (2016) Vol. 12, No. 1. Refs: 82 E-ISSN: 1539-4646	Non-relevant by full text	This publication is considered not relevant for glyphosate risk assessment because no systematic epidemiological approach was followed. Similarly figures for workers were not reported, nor were exposure patterns observed.			
Pesticides and public health: an analysis of the regulatory approach to assessing the carcinogenicity of glyphosate in the European Union.	Clausing Peter; Robinson Claire; Burtscher-Schaden Helmut	Journal of epidemiology and community health, (2018 Aug) Vol. 72, No. 8, pp. 668-672. Electronic Publication Date: 13 Mar 2018 Journal code: 7909766. E-ISSN: 1470-2738. L-ISSN: 0143-005X. Report No.: PMC-PMC6204965.	Non-relevant by full text	No new data, a commentary article therefore not relevant for the renewal of glyphosate.			
Cancer risk by glyphosate: The "Weight of Evidence Approach" of BfR. Krebsgefahr durch Glyphosat: Der "Weight of Evidence Approach" des BfR.	Clausing, P.	Umweltmedizin Hygiene Arbeitsmedizin (2017), Volume 22, Number 1, pp. 27-34, 17 refs. ISSN: 2195-9811 Published by: Ecomed Medizin, Landsberg URL (Availability): http://www.ecomed-medin.de/umweltmedizin	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Influence of the spray adjuvant on the toxicity effects of a glyphosate formulation.	Coalova Isis; Rios de Molina Maria Del Carmen Chaufan Gabriela	Toxicology in vitro : an international journal published in association with BIBRA, (2014 Oct) Vol. 28, No. 7, pp. 1306-11. Electronic Publication Date: 3 Jul 2014 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Non-relevant by full text	Formulation tested in vitro (Atanor, Argentina; 48% glyphosate isopropylamine salt), non-representative formulation for the renewal			
Conjugal multiple system atrophy: Chance, shared risk factors, or evidence of transmissibility?.	Coon, Elizabeth A. (correspondence); Rocca, Walter; Melson, Christopher S.; Ahlskog, J. Eric; Matsumoto, Joseph Y.; Low, Philip A.; Singer, Wolfgang Rocca, Walter Coon, Elizabeth A. (correspondence)	Parkinsonism and Related Disorders, (October 2019) Vol. 67, pp. 10-13. Refs: 26 ISSN: 1353-8020; E-ISSN: 1873-5126 CODEN: PRDIFO	Non-relevant by full text	Glyphosate use is one of many potential environmental factors considered as a cause for multiple system atrophy, with no specific information provided.			
Glyphosate-surfactant herbicide poisoning in domestic animals: an epidemiological survey.	Cortinovis C; Caloni F Davanzo F; Rivolta M	The Veterinary record, (2015 Apr 18) Vol. 176, No. 16, pp. 413. Electronic Publication Date: 11 Feb 2015 Journal code: 0031164. E-ISSN: 2042-7670. L-ISSN: 0042-4900.	Non-relevant by full text	Acute poisoning in animals, not relevant for the renewal.			
Neuronal development and axon growth are altered by glyphosate through a WNT non-canonical signaling pathway.	Coullery Romina P; Ferrari Maria E Rosso Silvana B	Neurotoxicology, (2016 Jan) Vol. 52, pp. 150-61. Electronic Publication Date: 10 Dec 2015 Journal code: 7905589. E-ISSN: 1872-9711. L-ISSN: 0161-813X.	Non-relevant by full text	High in vitro doses >10 mM of glyphosate, therefore not representative of use/exposure and not relevant for the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Single and interactive toxic potential of Roundup and ammonium nitrate on Haemato-biochemical parameters in wistar rats	Dar, A. M.; Sultana, M.; Mir, H. A.; Bader, A. M.; Raina, R.; Prawez, S.	Journal of Cell and Tissue Research, (2015) Vol. 15, No. 3, pp. 5295-5299. CODEN: JCTRBO. ISSN: 0973-0028.	Non-relevant by full text	High dose of GBH administered to rats in drinking water			
Sub-acute oral toxicity of Roundup® and ammonium nitrate with special reference to oxidative stress indices in wistar rats.	Dar, M. A.; Mudasir Sultana; Mir, A. H.; Bhat, M. A.; Wani, T. A.; Zulfqarul Haq; Sultana, M.; Haq, Z.	Indian Journal of Animal Research (2018), Volume 52, Number 3, pp. 405-408, 39 refs. ISSN: 0367-6722 Published by: Agricultural Research Communication Centre, Karnal URL (Availability): http://www.arcejournals.com/journals/indian-journal-of-animal-research	Non-relevant by full text	Formulation tested Roundup® (Glyphosate 41 % EC, SD Fine Chemicals Mumbai, India); this is not representative for the EU renewal.			
Effect of Repeated Oral Administration of Roundup(R) and Ammonium Nitrate on Liver of Wistar Rats.	Dar, Muneer Ahmad [Reprint Author]; Sultana, Mudasir; Mir, Arshad Hussain; Raina, Rajinder; Prawez, Shahid	Proceedings of the Indian National Science Academy Part B Biological Sciences, (JUN 2019) Vol. 89, No. 2, pp. 505-510. http://www.springerlink.com/content/0369-8211/ . CODEN: PAIBA6. ISSN: 0369-8211. E-ISSN: 2250-1746.	Non-relevant by full text	Formulation tested (Roundup, 41% EC) which is not the representative formulation used in the renewal.			
Pesticide exposure and cognitive function: Results from the Hellenic Longitudinal Investigation of Aging and Diet (HELIAD)	Dardiotis, Efthimios; Siokas, Vasileios; Moza, Sotiria; Kosmidis, Mary H.; Vogiatzi, Christina; Aloizou, Athina-Maria; Geronikola, Nikoletta; Ntanasi, Eva; Zalonis, Ioannis; et al.	Environmental Research, (2019) Vol. 177, pp. 108632. CODEN: ENVRAL. ISSN: 0013-9351.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because exposure to glyphosate is not documented.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Occupational exposure of workers to pesticides: Toxicogenetics and susceptibility gene polymorphisms.	de Adad, Lucia Maria Miranda de Adad, Lucia Maria Miranda; Lehmann, Mauricio; Dihl, Rafael Rodrigues (correspondence) De Andrade, Heloisa Helena Rodrigues Kvitko, Katia Lehmann, Mauricio; Dihl, Rafael Rodrigues (correspondence) de Cavalcante, Ana Amelia C	Genetics and Molecular Biology, (1 Jul 2015) Vol. 38, No. 3, pp. 308-315. Refs: 43 ISSN: 1415-4757; E-ISSN: 1678-4685 CODEN: GMBIFG	Non-relevant by full text	Not specific to glyphosate and therefore not relevant to the renewal.			
Glyphosate-based herbicide exposure causes antioxidant defence responses in the fruit fly <i>Drosophila melanogaster</i> .	de Aguiar Lais Mattos; Figueira Fernanda Hernandes Gottschalk Marco Silva da Rosa Carlos Eduardo	Comparative biochemistry and physiology. Toxicology & pharmacology : CBP, (2016 Jul-Aug) Vol. 185-186, pp. 94-101. Electronic Publication Date: 12 Mar 2016 Journal code: 100959500. ISSN: 1532-0456. L-ISSN: 1532-0456.	Non-relevant by full text	Tested formulation (Roundup Original) for cellular mechanisms in houseflies, not directly relevant to human health risk assessment in the EU renewal of glyphosate.			Y
Genotoxic effects of the herbicide Roundup® in the fish <i>Corydoras paleatus</i> (Jenyns 1842) after short-term, environmentally low concentration exposure	de Castilhos Ghisi Nedra Cestari Marta Margarete	Environmental monitoring and assessment, (2013 Apr) Vol. 185, No. 4, pp. 3201-7. Electronic Publication Date: 22 Jul 2012 Journal code: 8508350. E-ISSN: 1573-2959. L-ISSN: 0167-6369.	Non-relevant by full text	Glyphosate based herbicide tested in aquatic species. As this is not the representative formulation, the article is not relevant to the renewal.	Y	Y	Y
Roundup disrupts male reproductive functions by triggering calcium-mediated cell death in rat testis and Sertoli cells.	de Liz Oliveira Cavalli Vera Lucia Cattani Daiane; Heinz Rieg Carla Elise; Pierozan Paula; Zanatta Leila; Benedetti Parisotto Eduardo; Wilhelm Filho Danilo; Mena Barreto Silva Fatima Regina; Pessoa-Pureur Regina; Zamoner Ariane	Free radical biology & medicine, (2013 Dec) Vol. 65, pp. 335-46. Electronic Publication Date: 29 Jun 2013 Journal code: 8709159. E-ISSN: 1873-4596. L-ISSN: 0891-5849.	Non-relevant by full text	Formulation tested in vitro (Roundup Original, 360 g/L, a.e., Brazil)			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of glyphosate-based herbicide on pintado da Amazonia: Hematology, histological aspects, metabolic parameters and genotoxic potential.	de Moura Fernando Rafael; Sugui Marina Mariko; Sinhorin Adilson Paulo da Silva Lima Ritane Rose; da Cunha Ana Paula Simoes; da Costa Marisco Patricia Aguiar Danilo Henrique Sinhorin Valeria Dornelles Gindri	Environmental toxicology and pharmacology, (2017 Dec) Vol. 56, pp. 241-248. Electronic Publication Date: 29 Sep 2017 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	The effects of high doses of Glyphosate based herbicide to aquatic species was assessed. As this is not the representative formulation, the article is not relevant to the renewal.			Y
Investigation of pesticide exposure by genotoxicological, biochemical, genetic polymorphic and in silico analysis	de Oliveira, Arielly F. B.; de Souza, Melissa Rosa; Benedetti, Danieli; Scotti, Amanda Souza; Piazza, Luma Smidt; Garcia, Ana Leticia Hilario; Dias, Johnny Ferraz; Niekraszewicz, Liana Appel Bouffleur; Duarte, Anai; Bauer, Deiverti; Amaral, Livio; Bassi Br	Ecotoxicology and Environmental Safety (2019), 179, 135-142 CODEN: EESADV; ISSN: 0147-6513	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is not specific to glyphosate. Focuses on mixtures of pesticides. It is not possible to establish a causal relationship between the biological endpoints assessed and exposure to glyphosate.			
Maternal glyphosate-based herbicide exposure alters antioxidant-related genes in the brain and serum metabolites of male rat offspring.	de Souza Janaina Sena Laureano-Melo Roberto; da Conceicao Rodrigo Rodrigues; Oliveira Kelen Carneiro; Dias-da-Silva Magnus Regios; Maciel Rui Monteiro de Barros; Chiamolera Maria Izabel Herai Roberto Hirochi da Silva Ismael Dale Cotrim Guerreiro Romano Re	Neurotoxicology, (2019 Jun 18) Vol. 74, pp. 121-131. Electronic Publication Date: 18 Jun 2019 Journal code: 7905589. E-ISSN: 1872-9711. L-ISSN: 0161-813X.	Non-relevant by full text	Formulated product tested was Glyphosate Roundup Transorb; Monsanto of Brazil Ltda, São Paulo, Brazil. As this is not the representative formulation, the article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Perinatal exposure to glyphosate-based herbicide alters the thyrotrophic axis and causes thyroid hormone homeostasis imbalance in male rats.	de Souza Janaina Sena; Kizys Marina Malta Letro; da Conceicao Rodrigo Rodrigues; Glebocki Gabriel; Giannocco Gisele; Dias da Silva Magnus Regios Romano Renata Marino; Romano Marco Aurelio Ortiga-Carvalho Tania Maria da Silva Ismael Dale Cotrim Guerreiro C	Toxicology, (20170215) Vol. 377, pp. 25-37. Electronic Publication Date: 1 Dec 2016 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because a glyphosate formulation (Roundup Transorb) was used instead of glyphosate.			
Toxicity of formulants and heavy metals in glyphosate-based herbicides and other pesticides.	Defarge N; Seralini G E Spiroux de Vendomois J	Toxicology reports, (2018) Vol. 5, pp. 156-163. Electronic Publication Date: 30 Dec 2017 Journal code: 101630272. E-ISSN: 2214-7500. L-ISSN: 2214-7500. Report No.: PMC-PMC5756058.	Non-relevant by full text	This paper is deemed not relevant as a non-representative formulation was tested as opposed to glyphosate.			
Effect of acute exposure of glyphosate herbicide, on wistar rats with reference to haematology and biochemical analysis	Deshmukh, U. S.; Iram, Faiza; Joshi, M. S.	Bioscan, (2013) Vol. 8, No. 2, pp. 381-383. CODEN: BIOSGT. ISSN: 0973-7049.	Non-relevant by full text	Formulation tested in vivo at excessively high dose of 4000 mg/kg/day for 7 days and is therefore not applicable to the EU renewal.			
Assessment of genotoxicity and cholinesterase activity among women workers occupationally exposed to pesticides in tea garden	Dhananjayan, V.; Ravichandran, B.; Panjakumar, K.; Kalaiselvi, K.; Rajasekar, Kausic; Mala, A.; Avinash, G.; Shridhar, K.; Manju, A.; Wilson, Rajesh	Mutation Research, Genetic Toxicology and Environmental Mutagenesis, (2019) Vol. 841, pp. 1-7. CODEN: MRGMFI. ISSN: 1383-5718.	Non-relevant by full text	General pesticide exposure evaluation, not glyphosate specific therefore not applicable to the EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Haemato-biochemical studies on glyphosate induced toxicity in rats.	Dhanarajam, Y.; Niyogi, D.; Bablee Jyoti; Choudhary, P. K.; Paswan, S.; Yogendra; Mukhopadhyay, S. K.; Jyoti, B.	Journal of Interacademia (2013), Volume 17, Number 3, pp. 512-517, 28 refs. ISSN: 0971-9016 Published by: Journal of Interacademia, Nadia	Non-relevant by full text	Formulation tested in vivo, via oral gavage at high doses of 400 and 800 mg/kg/day for 28 days (Roundup, 41% isopropylamine salt). As this is not the representative formulation, the article is not relevant to the renewal.			
Chronic pesticide mixture exposure including paraquat and respiratory outcomes among Colombian farmers.	Diaz-Criollo Sonia; Palma Marien; Monroy-Garcia Andres A; Combariza David Idrovo Alvaro J Idrovo Alvaro J Varona-Urbe Marcela E	Industrial health, (2019 Apr 18) . Electronic Publication Date: 18 Apr 2019 Journal code: 2985065R. E-ISSN: 1880-8026. L-ISSN: 0019-8366.	Non-relevant by full text	Mixtures paper, focused on paraquat mixtures therefore not relevant to the EU renewal.			
What is the meaning of 'A compound is carcinogenic'?	Dieter Schrenk	Toxicology reports, (2018) Vol. 5, pp. 504-511. Electronic Publication Date: 7 Apr 2018 Journal code: 101630272. E-ISSN: 2214-7500. L-ISSN: 2214-7500. Report No.: PMC-PMC5977538.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate as it concerns the classification of carcinogens in general and not glyphosate in particular.			
In vitro effects of some pesticides on glutathione-S-transferase activity.	Diken, M. E.; Dogan, S.; Dogan, M.; Turhan, Y.	Fresenius Environmental Bulletin (2017), Volume 26, Number 12A, pp. 8023-8029, 33 refs. ISSN: 1018-4619 Published by: Parlar Scientific Publications, Freising URL (Availability): http://www.prt-parlar.de/download_feb_2017/	Non-relevant by full text	Formulations tested at excessively high in vitro doses in the mM range and is therefore not applicable to the EU renewal.			
Effect of Zemrin® and four of its alkaloid constituents on electric excitability of the rat hippocampus.	Dimpfel, W.; Franklin, R.; Gericke, N.; Schombert, L.	Journal of Ethnopharmacology (2018), Volume 223, pp. 135-141, 31 refs. ISSN: 0378-8741 DOI: 10.1016/j.jep.2018.05.010 Published by: Elsevier Ltd, Oxford URL (Availability): https://www.sciencedirect.com/science/article/pii/S0378874118310067	Non-relevant by full text	AMPA described in the paper is not aminomethylphosphonic acid, rather <i>α</i> -amino-3-hydroxy-5-methyl-4-isoxazole-propionic acid, therefore not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The role of exposure to pesticides in the etiology of Parkinson's disease: a 18F-DOPA positron emission tomography study.	Djaldetti, Ruth (correspondence); Roditi, Yaniv Steinmetz, Adam Rigbi, Amihai Scherfler, Christoph; Poewe, Werner Greenbaum, Lior Greenbaum, Lior Lorberboym, Mordechai Djaldetti, Ruth (correspondence); Steinmetz, Adam; Greenbaum, Lior; Lorberboym, Mordech	Journal of Neural Transmission, (14 Feb 2019) Vol. 126, No. 2, pp. 159-166. Refs: 32 ISSN: 0300-9564; E-ISSN: 1435-1463 CODEN: JNTRF3	Non-relevant by full text	A general pesticides paper which does not present any new glyphosate specific data. Therefore not relevant to the renewal.			
Genotoxic and biochemical effects of atrazine and Roundup®, alone and in combination, on the Asian clam Corbicula fluminea.	dos Santos Kelly Cristina Martinez Claudia B R	Ecotoxicology and environmental safety, (2014 Feb) Vol. 100, pp. 7-14. Electronic Publication Date: 20 Dec 2013 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	A glyphosate based herbicide was tested on an aquatic invertebrate. As this is not the representative formulation, the article is not relevant to the renewal.	Y	Y	Y
Carcinogenicity of glyphosate: why is New Zealand's EPA lost in the weeds?.	Douwes Jeroen; 't Mannetje Andrea; McLean Dave; Potter John D Pearce Neil Woodward Alistair	The New Zealand medical journal, (20180323) Vol. 131, No. 1472, pp. 82-89. Electronic Publication Date: 23 Mar 2018 Journal code: 0401067. E-ISSN: 1175-8716. L-ISSN: 0028-8446.	Non-relevant by full text	Opinion article with no new data relevant to the renewal of glyphosate.			
Protective effect of the cisteil-histidile-tyrosile-histidile-isoleucine against heavy metal and glyfosate induced on content of lipid peroxidation products and reactive oxygen species in different age rats	Dumukhalska, Ye. B.; Yaroshenko, T. Ya.; Kuzmak, I. P.	Medichna ta Klinichna Khimiya, (2018) No. 2, pp. 77-83. CODEN: MCCEC2. ISSN: 2414-9934.	Non-relevant by full text	Administered a glyphosate based herbicide to rats for 30 days at 25% of acute oral LD50, this is not a representative way of exposure.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Science, safety, and sanity: hot topics in food toxicology.	Eapen, A.; Lau, A.; Hanlon, P.; Drake, J.	Journal of Food Protection (2018), Volume 81, 24 p., Suppl. A, IAFP 2018 Annual Meeting, Salt Lake City, Utah, July 8-11 ISSN: 0362-028X DOI: 10.4315/0362-028X-81.sp1.1	Non-relevant by full text	This paper did not mention glyphosate and is therefore not relevant.			
Hepatotoxicity induced by glyphosate-based herbicide baron in albino rats.	Elhalwagy, M. E. A.; Abdulmagid, N. A.; Alnahdi, H. S.; Danial, E. N.	Journal of Animal and Veterinary Advances (2014), Volume 13, Number 5, pp. 322-329, 45 refs. ISSN: 1680-5593 Published by: Medwell Online, Faisalabad URL (Availability): http://docsdrive.com/pdfs/medwelljournals/javaa/2014/322-329.pdf	Non-relevant by full text	Formulation tested in vivo (Baron, 48% glyphosate, Egypt). As this is not the representative formulation, the article is not relevant to the renewal.			
Morphological damages of a glyphosate-treated human keratinocyte cell line revealed by a micro- to nanoscale microscopic investigation.	Elie-Caille Celine Heu Celine; Guyon Catherine; Nicod Laurence	Cell biology and toxicology, (2010 Aug) Vol. 26, No. 4, pp. 331-9. Electronic Publication Date: 31 Dec 2009 Journal code: 8506639. E-ISSN: 1573-6822. L-ISSN: 0742-2091.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate as the test concentrations used were in the range of 10-70 mM (all >> 1mM) and therefore considered physiologically irrelevant.	Y		
Protective potential of betulinic acid against glyphosate-induced toxicity in testis and epididymis of male wistar rats	Emmanuel, Adeleke Gbadebo; Temitope, Adedosu Olaniyi; Abiodun, Badmus Jelili; Adekunle, Adaramoye Oluwatosin; Samuel, Olajuemo Tobi; Oluomo, Rasheed Saheed	International Journal of Current Research, (2015) Vol. 7, No. 6, pp. 16650-16660. CODEN: IJCRL. ISSN: 0975-833X.	Non-relevant by full text	Formulation tested in vivo (described as "commercial glyphosate"). As this is not the representative formulation, the article is not relevant to the renewal.			
Histopathological changes in the brain tissue of Africa catfish exposure to glyphosate herbicide.	Erhunmwunse, N. O.; Sa, E.; Ainerua, M. O.; Ewere, E. E.	Journal of Applied Sciences and Environmental Management (2014), Volume 18, Number 2, pp. 275-280, 14 refs. ISSN: 1119-8362 Published by: NCRP, Faculty of Science, University of Port Harcourt, Port Harcourt URL (Availability): http://www.ajol.info/index.p	Non-relevant by full text	Formulation tested (commercial formulation of glyphosate (360 g/l-41 w.wt IPA). As this is not the representative formulation, the article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The Seralini affair: degeneration of Science to Re-Science?	Fagan, J.; Traavik, T.; Bohn, T.	Environmental Sciences Europe (2015), Volume 27, Number 19, (29 August 2015) p., 48 refs. ISSN: 2190-4715 Published by: SpringerOpen, Heidelberg URL (Availability): http://www.enveurope.com/content/27/1/19	Non-relevant by full text	Commentary from the Seralini paper retraction therefore not relevant to the renewal.			
Glyphosate, neurological diseases - and the scientific method	Faria Miguel A	Surgical neurology international, (2015) Vol. 6, pp. 132. Electronic Publication Date: 10 Aug 2015 Journal code: 101535836. ISSN: 2229-5097. L-ISSN: 2152-7806. Report No.: NLM-PMC4538578; PMC-PMC4538578.	Non-relevant by full text	A letter providing comments on Samsel and Seneff (ref 2324). Therefore not relevant for the risk assessment of glyphosate.			
A review on gut remediation of selected environmental contaminants: Possible roles of probiotics and gut microbiota.	Feng, Pengya; Ye, Ze; Li, Xiangkai; Liu, Pu (correspondence) Feng, Pengya; Ye, Ze; Kakade, Apurva; Virk, Amanpreet Kaur; Li, Xiangkai; Liu, Pu (correspondence)	Nutrients, (January 2019) Vol. 11, No. 1. am. 22. Refs: 147 E-ISSN: 2072-6643	Non-relevant by full text	A literature review on pollutants, probiotics and gut microbes therefore not relevant for the risk assessment of glyphosate.			
The impact of human activities and lifestyles on the interlinked microbiota and health of humans and of ecosystems.	Flandroy, Lucette Poutahidis, Theofilos Berg, Gabriele Clarke, Gerard Dao, Maria-Carlota Dao, Maria-Carlota Dao, Maria-Carlota Decaestecker, Ellen Furman, Eeva Haahhtela, Tari Massart, Sebastien Plovier, Hubert Sanz, Yolanda Rook, Graham (correspondence)	Science of the Total Environment, (15 Jun 2018) Vol. 627, pp. 1018-1038. Refs: 306 ISSN: 0048-9697; E-ISSN: 1879-1026 CODEN: STEVA8	Non-relevant by full text	General discussion of microbiota and proposal for research prioritization therefore not relevant for the risk assessment of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate Use Predicts ADHD Hospital Discharges in the Healthcare Cost and Utilization Project Net (HCUPnet): A Two-Way Fixed-Effects Analysis.	Fluegge Keith R Fluegge Kyle R	PloS one, (2015) Vol. 10, No. 8, pp. e0133525. Electronic Publication Date: 19 Aug 2015 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC4543553.	Non-relevant by full text	Retracted publication, therefore not relevant for the risk assessment of glyphosate.			
Exploring the potential confounder of nitrogen fertilizers in the relationship between pesticide exposures and risk of leukemia: a Poisson regression with two-way fixed-effects analysis	Fluegge, Keith ; Fluegge, Kyle	Chinese Journal of Cancer, Vol. 36, 20170101 ISSN: 1000-467X E-ISSN: 1944-446X DOI: 10.1186/s40880-017-0225-4 Published by: BioMed Central, London	Non-relevant by full text	Letter to editor, focuses on nitrogen fertilizers and is therefore not relevant for the risk assessment of glyphosate.			
Exposure to ambient PM10 and nitrogen dioxide and ADHD risk: A reply to Min & Min (2017).	Fluegge, Keith [Reprint Author]; Fluegge, Kyle	Environment International, (JUN 2017) Vol. 103, pp. 109-110. http://www.journals.elsevier.com/environment-international/#description . CODEN: ENVIDV. ISSN: 0160-4120. E-ISSN: 1873-6750.	Non-relevant by full text	No new data, therefore not relevant for the risk assessment of glyphosate.			
Mapping Proteome-wide Targets of Glyphosate in Mice.	Ford Breanna; Bateman Leslie A; Gutierrez-Palominos Leilani Park Robin Nomura Daniel K	Cell chemical biology, (2017 Feb 16) Vol. 24, No. 2, pp. 133-140. Electronic Publication Date: 26 Jan 2017 Journal code: 101676030. E-ISSN: 2451-9456.	Non-relevant by full text	This publication is considered not relevant because intraperitoneal injection was used which is an inappropriate route of administration for the occupational and food risk assessment of glyphosate.			
Isoflavone quantitation in soymilk: Genistein content and its biological effect.	Freddo, Natalia; Nardi, Jessica; Bertol, Charise Dallazem; Dalleggrave, Eliane; Leal, Mirna B.; Barreto, Fabiano; Frizzo, Izadora Borgmann; Rossato-Grando, Luciana Grazziotin [Reprint Author]	CyTA-Journal of Food, (2019) Vol. 17, No. 1, pp. 20-24. http://www.tandfonline.com/loi/tyt20 . ISSN: 1947-6337. E-ISSN: 1947-6345.	Non-relevant by full text	It mainly concerns the development of a bioanalytical method for the analysis of genistein and glyphosate in soya milk. The biological end-point selected (anxiety) and the test system used (elevated plus maze test) are not acceptable for regulatory use.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Post-treatment with plant extracts used in Brazilian folk medicine caused a partial reversal of the antiproliferative effect of glyphosate in the <i>Allium cepa</i> test	Frescura Viviane Dal-Souto; Kuhn Andrielle Wouters; Paranhos Jucara Terezinha; Tedesco Solange Bosio Laughinghouse Haywood Dail 4th	Biocell : official journal of the Sociedades Latinoamericanas de Microscopia Electronica ... et. al, (2013 Aug) Vol. 37, No. 2, pp. 23-8. Journal code: 9438655. ISSN: 0327-9545. L-ISSN: 0327-9545.	Non-relevant by full text	Glyphosate used as an un-validated positive control in assay and is therefore not relevant for the risk assessment of glyphosate.	Y	Y	
Toxicity of glyphosate in feed for weanling piglets and the mechanism of glyphosate detoxification by the liver nuclear receptor CAR/PXR pathway.	Fu Huiyang; Qiu Shengnan; Yao Xinxin; Gao Feng; Tan Peng; Teng Teng Shi Baoming	Journal of hazardous materials, (2019 Nov 16) pp. 121707. Electronic Publication Date: 16 Nov 2019 Journal code: 9422688. E-ISSN: 1873-3336. L-ISSN: 0304-3894.	Non-relevant by full text	Glyphosate based herbicide dosed to weanling piglets. As this is not the representative formulation, the article is not relevant to the renewal.			
CpG and non-CpG methylation in the diet-epigenetics-neurodegeneration connection.	Fuso, Andrea (correspondence); Lucarelli, Marco Fuso, Andrea (correspondence) Lucarelli, Marco	Current Nutrition Reports, (2019) Vol. 8, No. 2, pp. 74-82. Refs: 107 E-ISSN: 2161-3311	Non-relevant by full text	A review paper that mentions glyphosate once without any data. Therefore is not relevant for the risk assessment of glyphosate.			
Exposure to a glyphosate-based herbicide during pregnancy and lactation induces neurobehavioral alterations in rat offspring.	Gallegos Cristina E Bartos Mariana; Bras Cristina; Gumilar Fernanda; Minetti Alejandra Antonelli Marta C	Neurotoxicology, (2016 Mar) Vol. 53, pp. 20-28. Electronic Publication Date: 26 Nov 2015 Journal code: 7905589. E-ISSN: 1872-9711. L-ISSN: 0161-813X.	Non-relevant by full text	Formulation tested in vivo via drinking water (Glifloglex, 48% glyphosate, Gleba S.R.L., Argentina). As this is not the representative formulation, the article is not relevant to the renewal.			
Perinatal Glyphosate-Based Herbicide Exposure in Rats Alters Brain Antioxidant Status, Glutamate and Acetylcholine Metabolism and Affects Recognition Memory.	Gallegos Cristina Eugenia; Bartos Mariana; Bras Cristina; Dominguez Sergio; Monaco Nina; Gumilar Fernanda; Minetti Alejandra Baier Carlos Javier Gimenez Maria Sofia	Neurotoxicity research, (2018 Oct) Vol. 34, No. 3, pp. 363-374. Electronic Publication Date: 2 Apr 2018 Journal code: 100929017. E-ISSN: 1476-3524. L-ISSN: 1029-8428.	Non-relevant by full text	Formulation tested (in Argentina, Glifloglex® from Gleba S.R.L., 48 g isopropylamine salt per 100 cm ³ ; 35.6% w/v a.e.). As this is not the representative formulation, the article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Defined plant extracts can protect human cells against combined xenobiotic effects.	Gasnier Celine Laurant Claire; Decroix-Laporte Cecile; Mesnage Robin; Clair Emilie; Travert Carine; Seralini Gilles-Eric	Journal of occupational medicine and toxicology (London, England), (2011 Jan 20) Vol. 6, No. 1, pp. 3. Electronic Publication Date: 20 Jan 2011 Journal code: 101245790. E-ISSN: 1745-6673. L-ISSN: 1745-6673. Report No.: PMC-PMC3041787.	Non-relevant by full text	Protective mechanism of plant extracts upon various chemical exposure (RoundUp residues, Bisphenol A, Atrazine)			
Dig1 protects against cell death provoked by glyphosate-based herbicides in human liver cell lines	Gasnier, Celine; Benachour, Nora; Clair, Emilie; Travert, Carine; Langlois, Frederic; Laurant, Claire; Decroix-Laporte, Cecile; Seralini, Gilles- Eric	Journal of Occupational Medicine and Toxicology [J. Occup. Med. Toxicol.]. Vol. 5, pp. 29-29. 27 Oct 2010. E-ISSN: 1745-6673 DOI: 10.1186/1745-6673-5-29 Published by: BioMed Central Ltd., Middlesex House London W1T 4LB UK	Non-relevant by full text	Protective mechanism of plant extracts upon various chemical exposure (RoundUp residues, Bisphenol A, Atrazine)			
In vitro effects of some pesticides on PON1Q192 and PON1R192 isoenzymes from human serum.	Gencer, N.; Arslan, O.	Fresenius Environmental Bulletin (2011), Volume 20, Number 3, pp. 590-596, 30 refs. ISSN: 1018-4619 Published by: Parlar Scientific Publications, Freising URL (Availability): http://www.psp-parlar.de	Non-relevant by full text	Test material identity is entirely missing and the claim presented is dubious: "The pesticides were of commercial origin, and at the highest available purity level (99%)." Therefore it is not relevant to the renewal of glyphosate.			
Micronucleus assay as a biomarker of genotoxicity in the occupational exposure to agrochemicals in rural workers	Gentile, N.; Manas, F.; Bosch, B.; Peralta, L.; Gorla, N.; Aiassa, D.	Bulletin of Environmental Contamination and Toxicology, (2012) Vol. 88, No. 6, pp. 816-822. CODEN: BECTA6. ISSN: 0007-4861.	Non-relevant by full text	no glyphosate specific data			
Studies on glyphosate-induced carcinogenicity in mouse skin: a proteomic approach.	George Jasmine Prasad Sahdeo; Mahmood Zafar; Shukla Yogeshwer	Journal of proteomics. (2010 Mar 10) Vol. 73, No. 5, pp. 951-64. Electronic Publication Date: 4 Jan 2010 Journal code: 101475056. E-ISSN: 1876-7737. L-ISSN: 1874-3919.	Non-relevant by full text	The test material was a glyphosate-based formulation and not the reference formulation MON 52276.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Emptying of Intracellular Calcium Pool and Oxidative Stress Imbalance Are Associated with the Glyphosate-Induced Proliferation in Human Skin Keratinocytes HaCaT Cells.	George Jasmine Shukla Yogeshwer	ISRN dermatology, (2013) Vol. 2013, pp. 825180. Electronic Publication Date: 29 Aug 2013 Journal code: 101566611. ISSN: 2090-4592. L-ISSN: 2090-4592. Report No.: NLM-PMC3773425; PMC-PMC3773425.	Non-relevant by full text	Formulation tested in vivo via dermal application (Roundup Original, 41% isopropylamine salt, 36% a.e.). Relevance of proteomic measurements not validated			
Male mammary gland development and methylation status of estrogen receptor alpha in Wistar rats are modified by the developmental exposure to a glyphosate-based herbicide.	Gomez Ayelen L; Altamirano Gabriela A; Munoz-de-Toro Monica Leturia Jorgelina Bosquiazzi Veronica L Kass Laura	Molecular and cellular endocrinology, (20190205) Vol. 481, pp. 14-25. Electronic Publication Date: 14 Nov 2018 Journal code: 7500844. E-ISSN: 1872-8057. L-ISSN: 0303-7207.	Non-relevant by full text	Formulation tested (Magnum Super II, Grupo Agros SA; 66.2% K salt, 54% a.e.). As this is not the representative formulation, the article is not relevant to the renewal.			
Assessing the genotoxic risk for Mexican children who are in residential proximity to agricultural areas with intense aerial pesticide applications	Gomez-Arroyo, Sandra; Martinez-Valenzuel, Carmen; Calvo-Gonzalez, Soledad; Villalobos-Pietrini, Rafael; Waliszewski, Stefan M.; Calderon-Segura, Maria Elena; Martinez-Arroyo, Amparo; Felix-Gastelum, Ruben; Lagarda-Escarrega, Abigail	Revista Internacional de Contaminacion Ambiental, (2013) Vol. 29, No. 3, pp. 217-225. CODEN: RCAME5. ISSN: 0188-4999.	Non-relevant by full text	This study does not present any glyphosate specific information and is therefore not relevant to the renewal.			
Corrosive injury of the trachea in children.	Goussard, Pierre (correspondence); Mfingwana, Lunga; Morrison, Julie Ismail, Zane; Wagenaar, Riegart; Janson, Jacques	Clinical Case Reports, (1 Oct 2019) Vol. 7, No. 10, pp. 1999-2003. Refs: 20 E-ISSN: 2050-0904	Non-relevant by full text	One of the cases cited in the article swallowed an unknown amount of glyphosate formulation. No other mention of glyphosate. Focus of article on corrosion of trachea, not glyphosate and is therefore not relevant to the renewal			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Dig1 protects against locomotor and biochemical dysfunctions provoked by Roundup.	Gress Steeve; Defarge Nicolas; Traveret Carine; Seralini Gilles-Eric Laurant Claire	BMC complementary and alternative medicine, (2016 Jul 22) Vol. 16, pp. 234. Electronic Publication Date: 22 Jul 2016 Journal code: 101088661. E-ISSN: 1472-6882. L-ISSN: 1472-6882. Report No.: NLM-PMC4957837; PMC-PMC4957837.	Non-relevant by full text	Glyphosate based herbicide administered to rats in drinking water. As this is not the representative formulation, the article is not relevant to the renewal.			
Cardiotoxic Electrophysiological Effects of the Herbicide Roundup® in Rat and Rabbit Ventricular Myocardium In Vitro.	Gress Steeve; Seralini Gilles-Eric Gress Steeve; Lemoine Sandrine; Rouet Rene Lemoine Sandrine Lemoine Sandrine Puddu Paolo-Emilio	Cardiovascular toxicology, (2015 Oct) Vol. 15, No. 4, pp. 324-35. Journal code: 101135818. E-ISSN: 1559-0259. L-ISSN: 1530-7905.	Non-relevant by full text	Roundup Ultra formulation tested in vitro. As this is not the representative formulation, the article is not relevant to the renewal.			
Glyphosate-based herbicide enhances the uterine sensitivity to estradiol in rats.	Guerrero Schimpf Marlise Milesi Maria M Luque Enrique H Varayoud Jorgelina	The Journal of endocrinology, (2018 Aug 18) . Electronic Publication Date: 18 Aug 2018 Journal code: 0375363. E-ISSN: 1479-6805. L-ISSN: 0022-0795.	Non-relevant by full text	Non representative formulation tested instead of glyphosate. As this is not the representative formulation, the article is not relevant to the renewal.			
Neonatal exposure to a glyphosate based herbicide alters the development of the rat uterus.	Guerrero Schimpf Marlise; Milesi Maria M; Ingaramo Paola I; Luque Enrique H Varayoud Jorgelina	Toxicology, (2017 Feb 01) Vol. 376, pp. 2-14. Electronic Publication Date: 7 Jun 2016 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Non-relevant by full text	Formulation tested in vivo via subcutaneous injection (Roundup FULL II, 66.2% potassium salt). As this is not the representative formulation, the article is not relevant to the renewal.			
Characterization of residential pesticide use and chemical formulations through self-report and household inventory: The northern California childhood leukemia study.	Guha, Neela; Gunier, Robert; Buffer, Patricia A.; Metayer, Catherine (correspondence) Guha, Neela Ward, Mary H.; Colt, Joanne S. Suzanne Lea, C. Metayer, Catherine (correspondence)	Environmental Health Perspectives, (February 2013) Vol. 121, No. 2, pp. 276-282. Refs: 38 ISSN: 0091-6765; E-ISSN: 1552-9924	Non-relevant by full text	No data relevant to glyphosate human health effects and exposure to glyphosate therefore not relevant to the risk assessments.	Y		

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
DNA damage in fish (<i>Anguilla anguilla</i>) exposed to a glyphosate-based herbicide -- elucidation of organ-specificity and the role of oxidative stress.	Guilherme S Gaivao I; Santos M A; Pacheco M	Mutation research, (2012 Mar 18) Vol. 743, No. 1-2, pp. 1-9. Electronic Publication Date: 14 Jan 2012 Journal code: 0400763. ISSN: 0027-5107. L-ISSN: 0027-5107.	Non-relevant by full text	Glyphosate based herbicide tested in eels, surfactants present in the formulation are known to damage gills. As this is not the representative formulation, the article is not relevant to the renewal.	Y	Y	Y
Are DNA-damaging effects induced by herbicide formulations (Roundup® and Garlon®) in fish transient and reversible upon cessation of exposure?	Guilherme S Santos M A; Pacheco M Gaivao I	Aquatic toxicology (Amsterdam, Netherlands), (2014 Oct) Vol. 155, pp. 213-21. Electronic Publication Date: 9 Jul 2014 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Glyphosate based herbicide tested in aquatic species. As this is not the representative formulation, the article is not relevant to the renewal.	Y	Y	Y
Glyphosate's Synergistic Toxicity in Combination with Other Factors as a Cause of Chronic Kidney Disease of Unknown Origin.	Gunatilake Sarath Seneff Stephanie Orlando Laura	International journal of environmental research and public health, (20190731) Vol. 16, No. 15. Electronic Publication Date: 31 Jul 2019 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: PMC-PMC6695815.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it does not present concrete epidemiological data on a possible association between chronic kidney disease and a synergistic effect of glyphosate with other environmental factors such as heavy metals.			
Carcinogenicity of tetrachlorvinphos, parathion, malathion, diazinon, and glyphosate	Guyton, Kathryn Z; Loomis, Dana; Grosse, Yann; El Ghissassi, Fatiha; Benbrahim-Tallaa, Lamia; Guha, Neela; Scoccianti, Chiara; Mattock, Heidi; Straif, Kurt	Lancet Oncology. Vol. 16, no. 5, pp. 490-491. May 2015., 12 refs. ISSN: 1470-2045 DOI: 10.1016/S1470-2045(15)70134-8 Published by: Elsevier B.V., Radarweg 29 Amsterdam 1043 NX Netherlands	Non-relevant by full text	This review is considered not relevant for the risk assessment of glyphosate because it does not contain a detailed report and discussion of experimental results. It only concerns a brief summary of the IARC evaluation of glyphosate which is not corroborated by regulatory agencies.			
Assessment of ABCG2-mediated transport of pesticides across the rabbit placenta barrier using a novel MDCKII in vitro model.	Halwachs Sandra Schafer Ingo; Seibel Peter Kneuer Carsten Honscha Walther	Toxicology and applied pharmacology (20160815) Vol. 305, pp. 66-74. Electronic Publication Date: 8 Jun 2016 Journal code: 0416575. E-ISSN: 1096-0333. L-ISSN: 0041-008X.	Non-relevant by full text	No adverse effects, and therefore there is no relevance to the human health risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Nephrotoxicity of Kalach 360 SL: biochemical and histopathological findings.	Hamdaoui Latifa; Mzid Massara; Rebai Tarek Naifar Manel; Chtourou Amel; Makni-Ayadi Fatma Ben Salem Mariem; Sahnoun Zouheir	Toxicology mechanisms and methods, (2016 Nov) Vol. 26, No. 9, pp. 685-691. Electronic Publication Date: 27 Oct 2016 Journal code: 101134521. E-ISSN: 1537-6524. L-ISSN: 1537-6516.	Non-relevant by full text	Formulation tested (Kalach 360 SL) in vivo. As this is not the representative formulation, the article is not relevant to the renewal.			
Sub-chronic exposure to Kalach 360 SL-induced damage in rats' liver and hematological system.	Hamdaoui Latifa; Rahmouni Fatma; Rebai Tarek Naifar Manel; Ayadi Fatma	Environmental science and pollution research international, (2019 Dec) Vol. 26, No. 36, pp. 36634-36646. Electronic Publication Date: 16 Nov 2019 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Glyphosate based herbicide dosed to rats. As this is not the representative formulation, the article is not relevant to the renewal.			
Subchronic exposure to kalach 360 SL-induced endocrine disruption and ovary damage in female rats.	Hamdaoui Latifa; Rahmouni Fatma; Rebai Tarek Naifar Manel; Ayadi Fatma Harrabi Bahira; Sahnoun Zouheir	Archives of physiology and biochemistry, (2018 Feb) Vol. 124, No. 1, pp. 27-34. Electronic Publication Date: 14 Jul 2017 Journal code: 9510153. E-ISSN: 1744-4160. L-ISSN: 1381-3455.	Non-relevant by full text	Formulation tested (KL, Arysta Life Science, Fouchana Tunisia; isopropylamine salt 41.5%; surfactant, 15.5%). As this is not the representative formulation, the article is not relevant to the renewal.			
Determination of glyphosate and its metabolite in emergency room in Korea.	Han Joseph; Moon Hantae; Hong Youngki; Yang Songhee; Chung Heesun Jeong Won-Joon Lee Kwang-Sik	Forensic science international, (2016 Aug) Vol. 265, pp. 41-6. Electronic Publication Date: 7 Jan 2016 Journal code: 7902034. E-ISSN: 1872-6283. L-ISSN: 0379-0738.	Non-relevant by full text	Analytical method development in human blood therefore not relevant to the glyphosate risk assessment.			
Roundup confers cytotoxicity through DNA damage and Mitochondria-Associated apoptosis induction	Hao, Youwu; Chen, Hui; Xu, Wenping; Gao, Jufang; Yang, Yun; Zhang, Yang; Tao, Liming	Environmental Pollution (Oxford, United Kingdom), (2019) Vol. 252, No. Part A, pp. 917-923. CODEN: ENPOEK. ISSN: 0269-7491.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because a glyphosate formulation was tested in vitro instead of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Evaluation of the cytotoxic effects of glyphosate herbicides in human liver, lung, and nerve	Hao, Youwu; Zhang, Yang; Ni, Hongfei; Gao, Jufang; Yang, Yun; Xu, Wenping; Tao, Liming	Journal of Environmental Science and Health - Part B Pesticides, Food Contaminants, and Agricultural Wastes (2 Sep 2019) Volume 54, Number 9, pp. 737-744, 44 refs. CODEN: JPFC D2 ISSN: 0360-1234 E-ISSN: 1532-4109 DOI: 10.1080/03601234.2019.1633215 Publis	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because glyphosate concentrations were tested in vitro that are physiologically not feasible in in vivo experimental models (> 1 mM).			
Effects of Glyphosate on Enzyme Activity and Serum Glucose in Rats Rattus norvegicus	HaskoviAX87, Edhem; Damir SuljeviAX87; Lejla MeAXA1aliAX87; Melina PekiAX87; Muhamed FoAX8Dak	Acta veterinaria (2016), Volume 66, Number 2, pp. 214-221 ISSN: 1820-7448 Published by: De Gruyter Open Source Note: 2016 June 28, v. 66, no. 2	Non-relevant by full text	Only liver enzymes measured after 15 days dermal application of formulated product (Total 480 SL, Croatia), which is not a representative formulation fo the renewal.			
Human intoxication by agrochemicals in the region of South Brazil between 1999 and 2014.	Hendges, Camila [Reprint Author]; Schiller, Andreia da Paz; Manfrin, Jessica; Macedo, Eurides Kuster Jr.; Goncalves, Affonso C.; Stangarlin, Jose Renato	Journal of Environmental Science and Health Part B Pesticides Food Contaminants and Agricultural Wastes. (APR 3 2019) Vol. 54, No. 4, pp. 219-225. http://www.tandfonline.com/loi/lesb20 . CODEN: JPFC D2. ISSN: 0360-1234. E-ISSN: 1532-4109.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it does not address specifically glyphosate exposure but pesticide poisoning in general.			
Oxidative stress induced by glyphosate-based herbicide on freshwater turtles.	Heritier Laurent; Meistertzheim Anne-Leila; Verneau Olivier Heritier Laurent; Meistertzheim Anne-Leila; Verneau Olivier Duval David; Galinier Richard Verneau Olivier	Environmental toxicology and chemistry, (2017)1200 Vol. 36, No. 12, pp. 3343-3350. Electronic Publication Date: 22 Aug 2017 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Glyphosate based herbicide tested on turtles. As this is not the representative formulation, the article is not relevant to the renewal.			Y
The herbicide glyphosate causes behavioral changes and alterations in dopaminergic markers in male Sprague-Dawley rat.	Hernandez-Plata Isela; Giordano Magda Diaz-Munoz Mauricio Rodriguez Veronica M	Neurotoxicology, (2015 Jan) Vol. 46, pp. 79-91. Electronic Publication Date: 15 Dec 2014 Journal code: 7905589. E-ISSN: 1872-9711. L-ISSN: 0161-813X.	Non-relevant by full text	This publication is considered not relevant because of the use of intraperitoneal injection which is an inappropriate route of exposure for the occupational and food risk assessment of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Epidemic of chronic kidney disease of nontraditional etiology in El Salvador: Integrated health sector action and south-south cooperation.	Herrera-Valdes, Raul, MD MS PhD DSc (correspondence) Orantes-Navarro, Carlos M. Lopez-Marin, Laura Bayarre-Vea, Hector Silva-Aycaguer, Luis C. De Figueroa, Patricia Orellana Smith-Gonzalez, Magaly	MEDICC Review, (2019) Vol. 21, No. 3, pp. 46-52. Refs: 33 ISSN: 1555-7960; E-ISSN: 1527-3172	Non-relevant by full text	No data specific to glyphosate. Evaluated handling of agrochemicals as a risk factor, rather than individual pesticides.			
Glyphosate-induced stiffening of HaCaT keratinocytes, a Peak Force Tapping study on living cells.	Heu Celine Berquand Alexandre; Elie-Caille Celine; Nicod Laurence	Journal of structural biology, (2012 Apr) Vol. 178, No. 1, pp. 1-7. Electronic Publication Date: 17 Feb 2012 Journal code: 9011206. E-ISSN: 1095-8657. L-ISSN: 1047-8477.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because glyphosate concentrations have been used in vitro that cannot be attained in in vivo experimental models (> 1 mM).			
A step further toward glyphosate-induced epidermal cell death: involvement of mitochondrial and oxidative mechanisms.	Heu Celine Elie-Caille Celine Mougey Virginie Launay Sophie Nicod Laurence	Environmental toxicology and pharmacology, (2012 Sep) Vol. 34, No. 2, pp. 144-153. Electronic Publication Date: 15 Mar 2012 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because the cytotoxicity of glyphosate to epidermal cells was tested in the mM range whereas contact of epidermal cells to glyphosate formulations is always combined with surfactants which produce cytotoxicity in the sub-mM range.			
The Biomarkers of Exposure and Effect in Agriculture (BEEA) Study: Rationale, Design, Methods, and Participant Characteristics	Hofmann Jonathan N; Beane Freeman Laura E; Andreotti Gabriella; Alavanja Michael C Lynch Charles F Thomas Kent W Sandler Dale P Savage Sharon A	Journal of toxicology and environmental health. Part A, (2015) Vol. 78, No. 21-22, pp. 1338-47. Electronic Publication Date: 9 Nov 2015 Journal code: 100960995. ISSN: 1528-7394. L-ISSN: 0098-4108. Report No.: PMC-PMC4674328; MID-NIHMS730396.	Non-relevant by full text	No endpoints for glyphosate, only relative use rates therefore cannot be used in the risk assessments.			
Effects of glyphosate on immune responses and haemocyte DNA damage of Chinese mitten crab, <i>Eriocheir sinensis</i> .	Hong Yuhang Yang Xiaozhen Yan Guangwen; Huang Yi; Zuo Fang; Shen Yixue; Ding Yan Cheng Yongxu	Fish & shellfish immunology, (2017 Dec) Vol. 71, pp. 19-27. Electronic Publication Date: 28 Sep 2017 Journal code: 9505220. E-ISSN: 1095-9947. L-ISSN: 1050-4648.	Non-relevant by full text	This paper discusses the effects of high doses of a glyphosate based herbicide to crabs. As this is not the representative formulation, the article is not relevant to the renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Cellular Toxicity of Surfactants Used as Herbicide Additives	Hong, Sae-Yong (Reprint) Seok, Su-Jin; Gil, Hyo-Wook; Yang, Jong-Oh; Lee, Eun-Young; Hong, Sae-Yong (Reprint) Song, Ho-Yeon; Kim, Young-Hee	JOURNAL OF KOREAN MEDICAL SCIENCE, (JAN 2012) Vol. 27, No. 1, pp. 3-9. ISSN: 1011-8934.	Non-relevant by full text	This study does not present any glyphosate specific information and cannot therefore be used in risk assessments.			
Can mortality from agricultural pesticide poisoning be predicted in the emergency department? Findings from a hospital-based study in eastern Taiwan	Hsu, Chi-Feng; Tsai, Ming-Jen; Chen, Kun-Chuan; Wu, Ren-Chieh; Hu, Sheng-Chuan	Tzu Chi Medical Journal [Tzu Chi Med. J.]. Vol. 25, no. 1, pp. 32-38. 1 Mar 2013. ISSN: 1016-3190 Published by: Zhonghua Minguo Fojiao Ciji Cishan Shiye Jijinhui (Buddhist Compassion Relief Tzu Chi Foundation), 707, Section 3, Chung Yang Rd. Hualien Taiwa	Non-relevant by full text	This paper provides a retrospective analysis of poisoning incidents in Taiwan and is therefore not relevant to the renewal of glyphosate.			
Assessment of infant exposure to food chemicals: the French Total Diet Study design	Hulin, M.; Bemrah, N.; Nougadere, A.; Volatier, J. L.; Sirot, V.; Leblanc, J. C.	Food Additives & Contaminants, Part A: Chemistry, Analysis, Control, Exposure & Risk Assessment, (2014) Vol. 31, No. 7, pp. 1226-1239. CODEN: FACPAA. ISSN: 1944-0057.	Non-relevant by full text	This paper describes the assessment process of infant exposure to food chemicals. No glyphosate data was presented in the report, and is therefore not relevant to the renewal process.			
Exposure to Sub-Acute Concentrations of Glyphosate Induce Clinico-Hematological, Serum Biochemical and Genotoxic Damage in Adult Cockerels	Hussain, Riaz (Reprint); Ali, Farah; Liaqat, Saima Rafique, Azhar Ghaffar, Abdul; Malik, Rozina; Niaz, Maria; Akram, Kashfa; Masood, Ayesha Jabeen, Ghazala Rafay, Muhammad Khan, Iahdasham Khan, Muhammad Kasib	PAKISTAN VETERINARY JOURNAL, (2019) Vol. 39, No. 2, pp. 181-186. ISSN: 0253-8318.	Non-relevant by full text	The glyphosate based herbicide used in the paper is not an EU representative formulation and is therefore not relevant to the renewal. Furthermore, the product was administered via gavage to avian species.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Cytotoxic and Genotoxic Effects of Pesticide Exposure in Male Coffee Farmworkers of the Jarabacoa Region, Dominican Republic	Hutter, Hans-Peter (Reprint); Khan, Abdul Wali; Lemmerer, Kathrin; Wallner, Peter; Kundi, Michael; Moshhammer, Hanns	INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, (AUG 2018) Vol. 15, No. 8. ISSN: 1660-4601.	Non-relevant by full text	This study did not include any analyses specific for glyphosate, so it is not relevant.			
Some organophosphate insecticides and herbicides.	IARC	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans (2017), Volume 112, VII + 452 p., 2 refs. ISSN: 1017-1606 Published by: IARC Press, International Agency for Research on Cancer, Lyon URL (Availability): http://monographs.iarc.fr/ENG/Mono	Non-relevant by full text	This paper provides a secondary source of information and is therefore not relevant.			
Toxicological impact of butralin, glyphosate-isopropylammonium and pendimethalin herbicides on physiological parameters of Biomphalaria alexandrina snails	Ibrahim, Amina M; Abdel-Ghaffar, Fathy; Ahmed, Amira Kamal; Bakry, Fayeze A; Rabei, Ibrahim	Molluscan research (2019), Volume 39, Number 3, pp. 224-233 ISSN: 1448-6067 Published by: Taylor & Francis Source Note: 2019 July 3, v. 39, no. 3	Non-relevant by full text	This paper describes an ecotoxicology study of snails exposed to a glyphosate based herbicide. As this is not the representative formulation, the article is not relevant to the renewal.			
Efficacy of ascorbic acid in reducing glyphosate-induced toxicity in rats.	Ikpeme, E. V.; Udensi, O.; Ekaluo, U. B.; Solomon, T. O.	British Biotechnology Journal (2012), Volume 2, Number 3, pp. 157-168, 34 refs. ISSN: 2231-2927 Published by: SCIENCEDOMAIN International, New Delhi URL (Availability): http://www.sciencedomain.org/abstract.php?iid=135&iid=11&aid=666	Non-relevant by full text	The formulation tested in vivo is not described. It is not sure what was tested and therefore the effect cannot be attributed to glyphosate.			
Applicability of the Ames test and micronucleus test in vivo for the evaluation of the equivalence of pesticide technical grade active ingredients compared to original active substances	Ilyushina, N. A.; Egorova, O. V.; Revazova, Yu. A.	Gigiena i Sanitariya (2019), Number 2, pp. 219-224, 30 refs. ISSN: 0016-9900 DOI: 10.18821/0016-9900-2019-98-2-219-224 Published by: Izdatel'stvo Meditsina, Moscow	Non-relevant by full text	Technical grade glyphosate was used as positive control in an assay within this paper. As this is not the representative formulation, the article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Acute uterine effects and long-term reproductive alterations in postnatally exposed female rats to a mixture of commercial formulations of endosulfan and glyphosate.	Ingaramo Paola I Guerrero Schimpf Marlise; Milesi Maria M; Luque Enrique H; Varayoud Jorgelina	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2019 Dec) Vol. 134, pp. 110832. Electronic Publication Date: 21 Sep 2019 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278	Non-relevant by full text	A glyphosate based herbicide was dosed to rats in this report. As this is not the representative formulation, the article is not relevant to the renewal.			
Neonatal exposure to a glyphosate-based herbicide alters uterine decidualization in rats.	Ingaramo Paola I; Varayoud Jorgelina; Milesi Maria M; Guerrero Schimpf Marlise; Alarcon Ramiro; Munoz-de-Toro Monica Luque Enrique H	Reproductive toxicology (Elmsford, N.Y.), (2017 Oct) Vol. 73, pp. 87-95. Electronic Publication Date: 2 Aug 2017 Journal code: 8803591. E-ISSN: 1873-1708. L-ISSN: 0890-6238.	Non-relevant by full text	Formulation tested in vivo via sub-cutaneous injection (undisclosed brand, 66.2% potassium salt; 54% glyphosate acid). As this is not the representative formulation, the article is not relevant to the renewal.			
Effects of neonatal exposure to a glyphosate-based herbicide on female rat reproduction.	Ingaramo Paola I; Varayoud Jorgelina; Milesi Maria M; Schimpf Marlise Guerrero; Munoz-de-Toro Monica; Luque Enrique H	Reproduction (Cambridge, England), (20161100) Vol. 152, No. 5, pp. 403-15. Electronic Publication Date: 2 Aug 2016 Journal code: 100966036. E-ISSN: 1741-7899. L-ISSN: 1470-1626.	Non-relevant by full text	A glyphosate based herbicide formulation was tested in vivo (66.2%, potassium salt). As this is not the representative formulation, the article is not relevant to the renewal.			
Assessment of DNA damages in lymphocytes of agricultural workers exposed to pesticides by comet assay in a cross-sectional study	Intranuovo, Graziana; Schiavulli, Nunzia; Cavone, Domenica; Birtolo, Francesco; Cocco, Pierluigi; Vimercati, Luigi; Macinagrossa, Linda; Giordano, Annamaria; Perrone, Tommasina; et al.	Biomarkers, (2018) Vol. 23, No. 5, pp. 462-473. CODEN: BIOMFA. ISSN: 1354-750X.	Non-relevant by full text	General pesticide exposure evaluation, not glyphosate specific. Therefore this article is not relevant to the glyphosate renewal process.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effect of glyphosate acid on biochemical markers of periphyton exposed in outdoor mesocosms in the presence and absence of the mussel <i>Limnoperna fortunei</i> .	Iummato Maria Mercedes; Del Carmen Rios de Molina Maria; Juarez Angela Beatriz Iummato Maria Mercedes; Del Carmen Rios de Molina Maria Pizarro Haydee; Cataldo Daniel; Di Fiori Eugenia Dos Santos Afonso Maria Juarez Angela Beatriz	Environmental toxicology and chemistry, (20170700) Vol. 36, No. 7, pp. 1775-1784. Electronic Publication Date: 25 May 2017 Journal code: 8308958, E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	The end-points described in this study are not relevant to human health risk assessments in the renewal.			Y
Drinking well water and occupational exposure to Herbicides is associated with chronic kidney disease, in Padavi-Sripura, Sri Lanka.	Jayasumana Channa Paranagama Priyani Agampodi Suneth Wijewardane Chinthaka Gunatilake Sarath Siribaddana Sisira	Environmental health : a global access science source, (2015 Jan 18) Vol. 14, pp. 6. Electronic Publication Date: 18 Jan 2015 Journal code: 101147645. E-ISSN: 1476-069X. L-ISSN: 1476-069X. Report No.: NLM-PMC4417209; PMC-PMC4417209.	Non-relevant by full text	This study was performed in Sri Lanka and is therefore not relevant to the EU.			
Phosphate fertilizer is a main source of arsenic in areas affected with chronic kidney disease of unknown etiology in Sri Lanka.	Jayasumana Channa; Siribaddana Sisira Fonseka Saranga; Jayalath Kumudika; Amarasinghe Mala; Paranagama Priyani Fernando Ashvin Gunatilake Sarath	SpringerPlus, (2015) Vol. 4, pp. 90. Electronic Publication Date: 24 Feb 2015 Journal code: 101597967. ISSN: 2193-1801. L-ISSN: 2193-1801. Report No.: NLM-PMC4348354; PMC-PMC4348354.	Non-relevant by full text	No data on glyphosate is presented, and is therefore not relevant to the renewal dossier.			
Chronic Interstitial Nephritis in Agricultural Communities (CINAC) in Sri Lanka	Jayasumana, Channa (Reprint)	SEMINARS IN NEPHROLOGY, (MAY 2019) Vol. 39, No. 3, pp. 278-283. ISSN: 0270-9295.	Non-relevant by full text	There is no evaluation of glyphosate exposure with any disease outcome presented in this paper. Therefore it is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Differential microRNA expression in the prefrontal cortex of mouse offspring induced by glyphosate exposure during pregnancy and lactation.	Ji Hua; Xu Linhao; Wang Zheng; Fan Xinli; Wu Lihui	Experimental and therapeutic medicine, (2018 Mar) Vol. 15, No. 3, pp. 2457-2467. Electronic Publication Date: 21 Dec 2017 Journal code: 101531947. ISSN: 1792-0981. L-ISSN: 1792-0981. Report No.: PMC-PMC5792815.	Non-relevant by full text	In this paper a glyphosate based formulation was tested, (purchased in China) and containing 48% IPA salt, and 35.6% a.e. Furthermore a glyphosate-based formulation (marketed in China) was used instead of glyphosate in an in vivo assay in mice with the end-points measured not suitable for risk assessment (differential microRNA expression in the prefrontal cortex).			
A commercial Roundup formulation induced male germ cell apoptosis by promoting the expression of XAF1 in adult mice	Jiang, Xiao; Zhang, Ning; Yin, Li; Zhang, Wen-long; Han, Fei; Liu, Wen-bin; Chen, Hong-qiang; Cao, Jia; Liu, Jin-yi	Toxicology Letters, (2018) Vol. 296, pp. 163-172. CODEN: TOLED5. ISSN: 0378-4274.	Non-relevant by full text	In this study, a Roundup formulation was administered via gavage to adult male mice. As this is not the representative formulation, the article is not relevant to the renewal.			
Effects of exposure to glyphosate in male and female mice behavior in pubertal period.	Joaquim, A. de O.; Macrini, D. J.; Ricci, E. L.; Rodrigues, P. A.; Spinoso, H. de S.; Suffredini, I. B.; Bernardi, M. M.; de S. Spinoso, H.	Brazilian Journal of Veterinary Research and Animal Science (2014), Volume 51, Number 3, pp. 194-203, 26 refs. ISSN: 1413-9596 DOI: 10.11606/issn.1678-4456.v51i3p194-203 Published by: Faculdade de Medicina Veterinaria e Zootecnia, Universidade de Sao Paul	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because a formulation (Roundup Transorb) was used instead of glyphosate.			
Behavioral effects of acute glyphosate exposure in male and female Balb/c mice.	Joaquim, A. de O.; Spinoso, H. de S.; Macrini, D. J.; Rodrigues, P. A.; Ricci, E. L.; Artioli, T. S.; Moreira, N.; Suffredini, I. B.; Bernardi, M. M.; de S. Spinoso, H.	Brazilian Journal of Veterinary Research and Animal Science (2012), Volume 49, Number 5, pp. 367-376, 31 refs. ISSN: 1413-9596 Published by: Faculdade de Medicina Veterinaria e Zootecnia, Universidade de Sao Paulo, Sao Paulo URL (Availability): http://www	Non-relevant by full text	Formulation tested in vivo was Roundup Transorb, 648 g/L of isopropylamine salt, 480 g/L a.e., Brazil. As this is not the representative formulation, the article is not relevant to the renewal.			
Agonistic effects of diverse xenobiotics on the constitutive androstane receptor as detected in a recombinant yeast-cell assay	Kamata, Ryo; Nakajima, Daisuke; Shiraishi, Fujio	Toxicology In Vitro, (2018) Vol. 46, pp. 335-349. CODEN: TIVIEQ. ISSN: 0887-2333.	Non-relevant by full text	This paper presents yeast cell assay validation. Glyphosate was not active in the test system and therefore this is not relevant for the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticide exposure and amyotrophic lateral sclerosis	Kamel, Freya; Umbach, David M.; Bedlack, Richard S.; Richards, Marie; Watson, Mary; Alavanja, Michael C. R.; Blair, Aaron; Hoppin, Jane A.; Schmidt, Silke; Sandler, Dale P.	NeuroToxicology, (2012) Vol. 33, No. 3, pp. 457-462. CODEN: NRTXDN. ISSN: 0161-813X.	Non-relevant by full text	This study does not present correlations of glyphosate use and effect and is not relevant to the renewal.			
Widespread occurrence of glyphosate in urine from pet dogs and cats in New York State, USA.	Karthikraj Rajendiran Kannan Kurunthachalam	The Science of the total environment, (2019 Apr 01) Vol. 659, pp. 790-795. Electronic Publication Date: 31 Dec 2018 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	These data do not meet any data requirement under Regulation (EC) 1107/2009 and do not fit within any standard risk assessment under that regulation. The results indicate that exposure to glyphosate may be common in this limited population of companion animals, but at levels which do not raise toxicological concern.			
Glyphosate toxicity and carcinogenicity.	Kawada Tomoyuki	EXCLI journal, (2018) Vol. 17, pp. 800-801. Electronic Publication Date: 16 Aug 2018 Journal code: 101299402. ISSN: 1611-2156. L-ISSN: 1611-2156. Report No.: PMC-PMC6141822.	Non-relevant by full text	Letter to editor citing other publications in this review, with no data discussed. Therefore not relevant to the renewal.			
Assessment of DNA damage in Brazilian workers occupationally exposed to pesticides: a study from Central Brazil.	Khayat, Caroline Borges; Alves Costa, Emilia Oliveira; Goncalves, Macks Wendhell; da Cruz e Cunha, Damiana Mirian da Cruz, Alex Silva; de Araujo Melo, Caroline Oliveira; Bastos, Rogerio Pereira; da Cruz, Aparecido Divino; de Melo e Silva, Daniela [Repri	Environmental Science and Pollution Research International, (OCT 2013) Vol. 20, No. 10, pp. 7334-7340. http://www.springerlink.com/content/112851/ . ISSN: 0944-1344. E-ISSN: 1614-7499.	Non-relevant by full text	No specific analyses was performed for glyphosate in this paper. Furthermore, uncertain sampling from an undefined population and adequate statistical analysis was carried out. No description of a case control study was provided, and the analysis did not evaluate a causal parameter for case control studies (e.g., an odds ratio) or address potential biases in the analysis. Therefore this study is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticides as a risk factor for metabolic syndrome: Population-based longitudinal study in Korea	Kim, Sung-Kyung; Park, Sungjin; Chang, Sei-Jin; Kim, Soo-Ki; Song, Jae Seok; Kim, Hyoung-Ryoul; Oh, Sung-Soo; Koh, Sang-Baek	Molecular & Cellular Toxicology (2019), 15(4), 431-441 CODEN: MCTODG; ISSN: 1738-642X	Non-relevant by full text	Epidemiology study on pesticide use in general. No information on specific pesticides used in the study was collected and is therefore not applicable to the renewal of glyphosate.			
A cross-sectional investigation of cardiovascular and metabolic biomarkers among conventional and organic farmers in Thailand	Kongtip, Pornpimol; Nankongnab, Noppanun; Tipayamongkhogul, Mathuros; Bunngamchairat, Ariya; Yimsabai, Jutharak; Patatitthong, Aranya; Woskie, Susan	International Journal of Environmental Research and Public Health, (2018) Vol. 15, No. 11, pp. 2590. CODEN: IJERGQ. ISSN: 1660-4601.	Non-relevant by full text	This paper presents an evaluation of the effects of pesticide use in general on metabolic biomarkers. The results are not correlated to glyphosate use and cannot be used in glyphosate risk assessments.			
Genetic susceptibility loci, pesticide exposure and prostate cancer risk	Koutros, Stella; Berndt, Sonja I.; Barry, Kathryn Hughes; Andreotti, Gabriella; Hoppin, Jane A.; Sandler, Dale P.; Yeager, Meredith; Burdett, Laurie A.; Yuenger, Jeffrey; et al.	PLoS One, (2013) Vol. 8, No. 4, pp. e58195. CODEN: POLNCL. ISSN: 1932-6203.	Non-relevant by full text	This paper does not mention glyphosate and is not relevant.			
Assessment of Glyphosate Induced Epigenetic Transgenerational Inheritance of Pathologies and Sperm Epimutations: Generational Toxicology	Kubsad, Deepika; Nilsson, Eric E.; King, Stephanie E.; Sadler-Riggelman, Ingrid; Beck, Daniel; Skinner, Michael K.	Scientific Reports, (2019) Vol. 9, No. 1, pp. 1-17. CODEN: SRCEC3. ISSN: 2045-2322.	Non-relevant by full text	This publication is considered not relevant because the intraperitoneal route of administration is not appropriate for the risk assessment of glyphosate.			
Interactions of Acephate, Glyphosate, Monocrotophos and Phorate with Bovine Serum Albumin.	Kumar, V. [Reprint Author]; Singh, S.	Indian Journal of Pharmaceutical Sciences, (NOV-DEC 2018) Vol. 80, No. 6, pp. 1151-1154. http://www.ijpsonline.com . CODEN: IJSDW. ISSN: 0250-474X. E-ISSN: 1998-3743.	Non-relevant by full text	Study of binding to bovine serum albumin by several pesticides. No significant effect of glyphosate in this test system and is therefore not relevant for the risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Herbicide ingredients change <i>Salmonella enterica</i> sv. Typhimurium and <i>Escherichia coli</i> antibiotic responses.	Kurenbach Brigitta; Silby Mark W; Heinemann Jack A Kurenbach Brigitta; Gibson Paddy S; Hill Amy M; Heinemann Jack A Bitzer Adam S; Silby Mark W Godsoe William	Microbiology (Reading, England), (2017 Nov 17) . Electronic Publication Date: 17 Nov 2017 Journal code: 9430468. E-ISSN: 1465-2080. L-ISSN: 1350-0872. Report No.: PMC-PMC5845734.	Non-relevant by full text	This study describes the addition of high doses of herbicide ingredients to an in vitro system. The reason for the exclusion of in vitro testing of formulations to assess health effects as a result of systemic exposure is the presence of surfactants which produce cell toxicity based on the destabilization of the cell membrane and the mitochondrial membrane thus masking the specific toxicity of glyphosate.			
The effect of metabolites and impurities of glyphosate on human erythrocytes (in vitro).	Kwiatkowska Marta Huras Bogumila Bukowska Bozena	Pesticide biochemistry and physiology, (2014 Feb) Vol. 109, pp. 34-43. Electronic Publication Date: 25 Jan 2014 Journal code: 1301573. E-ISSN: 1095-9939. L-ISSN: 0048-3575.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because the in vitro concentrations used are in the mM range and the impurities were tested at the same concentrations as glyphosate which will never occur in practice.			
The Impact of Glyphosate, Its Metabolites and Impurities on Viability, ATP Level and Morphological changes in Human Peripheral Blood Mononuclear Cells.	Kwiatkowska Marta; Jarosiewicz Pawel; Michalowicz Jaromir; Koter-Michalak Maria; Bukowska Bozena Huras Bogumila	PLoS one, (2016) Vol. 11, No. 6, pp. e0156946. Electronic Publication Date: 9 Jun 2016 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: NLM-PMC4900596; PMC-PMC4900596.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because the in vitro concentrations used are in the mM range and the impurities were tested at the same concentrations as glyphosate which will never occur in practice.			
Harmful Effects of the Dermal Intake of Commercial Formulations Containing Chlorpyrifos, 2,4-D, and Glyphosate on the Common Toad <i>Rhinella arenarum</i> (Anura: Bufonidae).	Lajmanovich, Rafael C. [Reprint Author]; Attademo, Andres M.; Simoniello, Maria F.; Poletta, Gisela L.; Junges, Celina M.; Peltzer, Paola M.; Grenon, Paula; Cabagna-Zenklusen, Mariana C.	Water Air and Soil Pollution, (DEC 2015) Vol. 226, No. 12, pp. Article No.: 427. http://www.springerlink.com/content/100344/ . CODEN: WAPLAC. ISSN: 0049-6979. E-ISSN: 1573-2932.	Non-relevant by full text	This study describes toad dermal exposure to a glyphosate based herbicide. Dermal uptake via moist toad skin was assessed and the end-points identified are not relevant to the human health risk assessment of glyphosate.			Y
Pesticides and Human Reproduction.	Landrigan, Philip J. [Reprint Author]	JAMA Internal Medicine, (JAN 2018) Vol. 178, No. 1, pp. 26-27. http://archinte.jamanetwork.com/journal.aspx . ISSN: 2168-6106. E-ISSN: 2168-6114.	Non-relevant by full text	No data provided in this paper as it is a commentary article. Cannot be used in a glyphosate risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The herbicide glyphosate is a weak inhibitor of acetylcholinesterase in rats.	Larsen Karen E Lifschitz Adrian L; Lanusse Carlos E Virkel Guillermo L	Environmental toxicology and pharmacology, (2016 Jul) Vol. 45, pp. 41-4. Electronic Publication Date: 18 May 2016 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because the concentrations used for in vitro testing were all in the mM range and not representative of in use conditions.			
Corrigendum to "Refined assessment and perspectives on the cumulative risk resulting from the dietary exposure to pesticide residues in the Danish population"[Food and Chemical Toxicology 111 (2018) 207-267] [Erratum to document cited in CA169:146371]	Larsson, Martin Olof; Nielsen, Vibe Sloth; Bjerre, Niels; Laporte, Frank; Cedergreen, Nina	Food and Chemical Toxicology, (2018) Vol. 113, pp. 345-346. CODEN: FCTOD7. ISSN: 0278-6915.	Non-relevant by full text	Corrigendum to paper correcting calculations not pertaining to glyphosate. Therefore not relevant.			
Common Pesticides Used in Suicide Attempts Following the 2012 Paraquat Ban in Korea.	Lee Jung-Won; Hwang Il-Woong; Kim Jae-Wook; Moon Hyung-Jun; Kim Ki-Hwan Park Suyeon Gil Hyo-Wook; Hong Sae-Yong	Journal of Korean medical science, (2015 Oct) Vol. 30, No. 10, pp. 1517-21. Electronic Publication Date: 12 Sep 2015 Journal code: 8703518. E-ISSN: 1598-6357. L-ISSN: 1011-8934. Report No.: NLM-PMC4575944; PMC-PMC4575944.	Non-relevant by full text	Reports numbers of suicide attempts in South Korea, common pesticide use, not specifically referring to glyphosate.			
A case of activated charcoal aspiration treated by early and repeated bronchoalveolar lavage.	Lee, Han Min; Park, Jae-Seok; Kim, Jae Yun; Gil, Hyo-Wook; Choi, Jae-Sung, Dr. (correspondence) Lee, Ji Yeon; Ahn, Byung Kyu	Tuberculosis and Respiratory Diseases, (29 Feb 2012) Vol. 72, No. 2, pp. 177-181. Refs: 11 ISSN: 1738-3536 CODEN: KHCHAM	Non-relevant by full text	Effects attributed to activated charcoal aspiration, not glyphosate. Therefore the paper is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticide exposure and health conditions among orange growers in Southern Brazil	Lermen, Joice; Bernieri, Tanandra; Rodrigues, Isabel S.; Suyenaga, Edna S.; Ardenghi, Patricia G.	Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes, (2018) Vol. 53, No. 4, pp. 215-221. CODEN: JPFCD2. ISSN: 0360-1234.	Non-relevant by full text	This publication is not relevant for the risk assessment of glyphosate because the biological monitoring data were only used to address pesticide exposure in general and not glyphosate in particular.			
Genotoxic response of blood, gill and liver cells of <i>Piaractus mesopotamicus</i> after an acute exposure to a glyphosate-based herbicide	Leveroni, Flavia Antonela; Jacqueline Diana Caffetti; Mar-A-Cristina Pastori	Caryologia (2017), Volume 70, Number 1, pp. 21-28 ISSN: 2165-5391 Published by: Taylor & Francis Source Note: 2017 Jan. 2, v. 70, no. 1	Non-relevant by full text	Formulation tested in aquatic species (Roundup Full II; 66.2% glyphosate potassium salt; CAS no. 70901-12-1). As this is not the representative formulation, the article is not relevant to the renewal.			Y
Lateralized basal ganglia vulnerability to pesticide exposure in asymptomatic agricultural workers	Lewis, Mechelle M.; Sterling, Nicholas W.; Du, Guangwei; Lee, Eun-Young; Shyu, Grace; Goldenberg, Michael; Allen, Thomas Stetter, Christy; Kong, Lan; et al.	Toxicological Sciences, (2017) Vol. 159, No. 1, pp. 170-178. CODEN: TOSCF2. ISSN: 1096-0929.	Non-relevant by full text	The results presented are not correlated with exposure to glyphosate. Therefore this article is not relevant to the renewal of glyphosate.			
GLYPHOSATE AND AMINOMETHYLPHOSPHONIC ACID IN POPULATION OF AGRICULTURAL FIELDS: HEALTH RISK ASSESSMENT OVERVIEW.	Leyva-Soto, L. A.; Balderrama-Carmona, A. P. [Reprint Author]; Moran-Palacio, E. F.; Diaz-Tenorio, L. M.; Gortares-Moroyoqui, P.	Applied Ecology and Environmental Research, (2018) Vol. 16, No. 4, pp. 5127-5140. http://www.aloki.hu . ISSN: 1589-1623. E-ISSN: 1785-0037.	Non-relevant by full text	This paper is misrepresented as an epidemiologic cohort study. It is an informal community health risk survey with uncertain exposure assessment and uncertain health outcomes. The study population is poorly characterized. Uncertain temporal relationship between purported glyphosate drinking water exposure and disease outcome. The analysis was not appropriate for a cohort (or case control) study and is not relevant for glyphosate renewal.			
Glyphosate and AMPA inhibit cancer cell growth through inhibiting intracellular glycine synthesis.	Li Qingli Lambrechts Mark J; Zhang Qiuyang; Liu Sen; Ge Dongxia; Yin Rutie; Xi Mingrong; You Zongbing	Drug design, development and therapy, (2013) Vol. 7, pp. 635-43. Electronic Publication Date: 24 Jul 2013 Journal code: 101475745. E-ISSN: 1177-8881. L-ISSN: 1177-8881. Report No.: NLM-PMC3749059; PMC-PMC3749059.	Non-relevant by full text	This paper described the therapeutic applications of glyphosate and AMPA at very high in vitro doses to cancer cells. This is deemed not relevant to the glyphosate renewal.	Y		

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Multi-tissue metabolic responses of goldfish (Carassius auratus) exposed to glyphosate-based herbicide.	Li, Ming-Hui; Xu, Hua-Dong; Liu, Yan; Chen, Ting; Jiang, Lei; Fu, Yong-Hong; Wang, Jun-Song [Reprint Author]	Toxicology Research, (2016) Vol. 5, No. 4, pp. 1039-1052. http://pubs.rsc.org/en/journals/journalsissues/tx . ISSN: 2045-452X. E-ISSN: 2045-4538.	Non-relevant by full text	This paper presents results of a glyphosate based herbicide tested on goldfish. The end-points defined are not relevant to the human health risk assessment for glyphosate renewal.			Y
The use of a disability-adjusted life-year (DALY) metric to measure human health damage resulting from pesticide maximum legal exposures.	Li, Zijian [Reprint Author]	Science of the Total Environment, (OCT 15 2018) Vol. 639, pp. 438-456. http://www.journals.elsevier.com/science-of-the-total-environment/#description . CODEN: STENDL. ISSN: 0048-9697. E-ISSN: 1879-1026.	Non-relevant by full text	This publication is considered not relevant because it concerns the development of a uniform metric (the disability-adjusted life-year; DALY) in risk characterisation to express the human health impact of pesticide exposure and not experimental data that can be used for the risk assessment of glyphosate.			
The effect of N-(phosphonomethyl)-glycine on phospholytic reaction catalyzed by phospholipase A2	Litvinko, N. M.; Skorostetskaya, L. A.; Gerlowski, D. O.	Vestsi Natsyyanal'nai Akademii Navuk Belarusi, Seryya Khimichnykh Navuk (2015), (3), 91-100 CODEN: VNBFX; ISSN: 1561-8331	Non-relevant by full text	Unrealistic in vitro concentrations of ≥ 100 mg/mL were tested in the study. Therefore not relevant to the renewal of glyphosate.			
Prevalence of isomerism from a European registry: Live births, fetal deaths, and terminations of pregnancy.	Loomba, Rohit S. [Reprint Author]	Congenital Anomalies, (NOV 2016) Vol. 56, No. 6, pp. 256-257. http://onlinelibrary.wiley.com/journal/0.1111/(ISSN)1741-4520 . CODEN: CGANE7. ISSN: 0914-3505. E-ISSN: 1741-4520.	Non-relevant by full text	This paper does not mention glyphosate or AMPA and is not relevant.			
Induction of micronuclei in broad snouted caiman (Caiman latirostris) hatchlings exposed in vivo to Roundup® (glyphosate) concentrations used in agriculture	Lopez Gonzalez, E C; Latorre, M A; Larriera, A; Siroski, P A; Poletta, G L	Pesticide biochemistry and physiology (2013), Volume 105, Number 2, pp. 131-134 ISSN: 0048-3575 Published by: Elsevier Inc. Source Note: 2013 Feb., v. 105, no. 2	Non-relevant by full text	The formulation tested in reptiles (Roundup, undefined, uncharacterized) is not the representative formulation, and therefore the article is not relevant to the renewal.		Y	Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Epigenetic disruption of estrogen receptor alpha is induced by a glyphosate-based herbicide in the preimplantation uterus of rats.	Lorenz Virginia; Milesi Maria M; Schimpf Marlise Guerrero; Luque Enrique H Varayoud Jorgelina	Molecular and cellular endocrinology, (20190115) Vol. 480, pp. 133-141. Electronic Publication Date: 2 Nov 2018 Journal code: 7500844. E-ISSN: 1872-8057. L-ISSN: 0303-7207.	Non-relevant by full text	Formulation tested (MAGNUM SUPER II) marketed in Argentina by Grupo Agros S.R.L. and comprises 66.2% potassium salt and 54% w/v a.e. As this is not the representative formulation, the article is not relevant to the renewal.			
Glyphosate-based herbicide affects biochemical parameters in <i>Rhamdia quelen</i> (Quoy & Gaimard, 1824 and) <i>Leporinus obtusidens</i> (Valenciennes, 1837).	Loro, Vania Lucia [Reprint Author]; Glusczak, Lissandra; Moraes, Bibiana S.; Leal, Claudio A. M.; Menezes, Charlene; Murussi, Camila R.; Leitemperger, Jossiele; Schetinger, Maria Rosa C.; Morsch, Vera Maria	Neotropical Ichthyology, (JAN-MAR 2015) Vol. 13, No. 1, pp. 229-235. ISSN: 1679-6225.	Non-relevant by full text	This study describes the application of high aquatic doses of glyphosate based herbicide with observed effects attributable to the surfactant present in the formulation. As this is not the representative formulation, the article is not relevant to the renewal.			
Genotoxic effects of Roundup Full II® on lymphocytes of <i>Chaetophractus villosus</i> (<i>Xenarthra</i> , Mammalia): In vitro studies.	Luaces Juan Pablo; Rossi Luis Francisco; Merani Maria Susana Luaces Juan Pablo; Rossi Luis Francisco; Chirino Monica Gabriela; Browne Melanie; Merani Maria Susana; Mudry Marta Dolores Chirino Monica Gabriela Mudry Marta Dolores	PloS one, (2017) Vol. 12, No. 8, pp. e0182911. Electronic Publication Date: 17 Aug 2017 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC5560724.	Non-relevant by full text	Formulation tested in vivo (Roundup Full II, containing 66.2% glyphosate, Argentina). As this is not the representative formulation, the article is not relevant to the renewal.			
In vitro cytotoxicity assessment of roundup (glyphosate) in L-02 hepatocytes.	Luo Lei Wang Fei Zhang Yiyuan; Zeng Ming; Zhong Caigao; Xiao Fang	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2017 Jun 03) Vol. 52, No. 6, pp. 410-417. Electronic Publication Date: 10 Mar 2017 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	Formulation tested in vitro (Roundup, containing 41% isopropylamine salt; Belgium). The effects observed are due to high dosing of the surfactant in vitro, and as this is not the representative formulation, the article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Mitotic abnormalities induced by glyphosate in <i>Psoralea corylifolia</i> L..	Mahakhode, R.H. (correspondence) Somkuwar, S.R.	International Journal of Current Pharmaceutical Research, (2013) Vol. 5, No. 1, pp. 46-48. Refs: 21 ISSN: 0975-7066	Non-relevant by full text	Tested a plant species with a herbicide for adverse end-points; the identified end-points are not relevant to human health and the renewal.			
Passive exposure to agricultural pesticides and risk of childhood leukemia in an Italian community.	Malagoli Carlotta; Malavolti Marcella Costanzini Sofia; Teggi Sergio Heck Julia E De Girolamo Gianfranco Oleari Paola Palazzi Giovanni Vinceti Marco	International journal of hygiene and environmental health, (2016)1100) Vol. 219, No. 8, pp. 742-748. Electronic Publication Date: 21 Sep 2016 Journal code: 100898843. E-ISSN: 1618-131X. L-ISSN: 1438-4639. Report No.: PMC-PMC5086430; MID-NIHMS820314.	Non-relevant by full text	This study did not perform any specific analyses for glyphosate. Furthermore, there was a very small case control study with a speculative exposure variable. This is not relevant for the renewal of glyphosate.			
Effect of glyphosate on serum biochemical indices of exposed workers	Mao, Yi-yang; Sun, Lan-fang; Cai, Xiang; Dou, Jian-rui; Zhu, Bao-li; Zhang, Feng	Zhongguo Gongye Yixue Zazhi, (2015) Vol. 28, No. 5, pp. 362-364. CODEN: ZGYAF2. ISSN: 1002-221X.	Non-relevant by full text	The worker protections and manufacturing processes in China do not reflect Western occupational exposure scenarios. Therefore this is not relevant to glyphosate renewal.			
Food components and contaminants as (anti)androgenic molecules.	Marcoccia, Daniele; Lorenzetti, Stefano (correspondence) Pellegrini, Marco; Fiocchetti, Marco; Marino, Maria Marcoccia, Daniele Pellegrini, Marco	Genes and Nutrition, (16 Feb 2017) Vol. 12, No. 1. arn. 6. Refs: 171 ISSN: 1555-8932; E-ISSN: 1865-3499	Non-relevant by full text	This paper discusses some glyphosate literature, but does not provide new data. Therefore it cannot be used in the glyphosate risk assessments.			
Progression of DNA damage induced by a glyphosate-based herbicide in fish (<i>Anguilla anguilla</i>) upon exposure and post-exposure periods--insights into the mechanisms of genotoxicity and DNA repair.	Marques Ana Guilherme Sofia; Santos Maria Ana; Pacheco Mario Gaivao Isabel	Comparative biochemistry and physiology. Toxicology & pharmacology : CBP, (2014 Nov) Vol. 166, pp. 126-33. Electronic Publication Date: 9 Aug 2014 Journal code: 100959500. ISSN: 1532-0456. L-ISSN: 1532-0456.	Non-relevant by full text	This study outlines the test of a glyphosate based herbicide to aquatic species. As this is not the representative formulation, the article is not relevant to the renewal.	Y	Y	Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Use of human neuroblastoma SH-SY5Y cells to evaluate glyphosate-induced effects on oxidative stress, neuronal development and cell death signaling pathways.	Martinez Maria-Aranzazu; Rodriguez Jose-Luis; Lopez-Torres Bernardo; Martinez-Larranaga Maria-Rosa; Maximiliano Jorge-Enrique; Ares Irma Martinez Marta; Anadon Arturo	Environment international, (2019 Dec 21) Vol. 135, pp. 105414. Electronic Publication Date: 21 Dec 2019 Journal code: 7807270. E-ISSN: 1873-6750. L-ISSN: 0160-4120.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate and AMPA as the concentrations used for the measurement of oxidative stress and apoptosis were beyond the physiologically acceptable range of 1 mM (5 and 10 mM).			
A commercial formulation of glyphosate inhibits proliferation and differentiation to adipocytes and induces apoptosis in 3T3-L1 fibroblasts.	Martini Claudia N Gabrielli Matias; Vila Maria del C	Toxicology in vitro : an international journal published in association with BIBRA, (2012 Sep) Vol. 26, No. 6, pp. 1007-13. Electronic Publication Date: 21 Apr 2012 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Non-relevant by full text	Formulation tested in vitro (glyphosate formulation; 48% w/v, isopropylamine salt, from Atanor, Argentina)			
Glyphosate Inhibits PPAR Gamma Induction and Differentiation of Preadipocytes and is able to Induce Oxidative Stress.	Martini Claudia N; Gabrielli Matias; Brandani Javier N; Vila Maria Del C	Journal of biochemical and molecular toxicology, (2016 Aug) Vol. 30, No. 8, pp. 404-13. Electronic Publication Date: 4 Apr 2016 Journal code: 9717231. E-ISSN: 1099-0461. L-ISSN: 1095-6670.	Non-relevant by full text	Formulation tested in vitro at a single high dose in the mM range (Glifosato Atanor, containing 48% isopropylamine salt, 35.6% glyphosate, Argentina). As this is not the representative formulation, the article is not relevant to the renewal.			
Glyphosate-based herbicides with different adjuvants are more potent inhibitors of 3T3-L1 fibroblast proliferation and differentiation to adipocytes than glyphosate alone.	Martini, C. N.; Gabrielli, M.; Codesido, M. M.; Vila, M. C. del; del Vila, M. C.	Comparative Clinical Pathology (2016), Volume 25, Number 3, pp. 607-613, 18 refs. ISSN: 1618-5641 DOI: 10.1007/s00580-016-2238-9 Published by: Springer Science + Business Media, London URL (Availability): http://link.springer.com/article/10.1007/s00580-016-2238-9	Non-relevant by full text	In this paper, three glyphosate-based herbicides with different adjuvants were tested in vitro. Glyphosate only effects were noted only at excessively high doses > 20mM, this is physiologically not possible to attain in standard regulatory in vivo testing			
Assessment of three approaches for regulatory decision making on pesticides with endocrine disrupting properties	Marx-Stoelting, P.; Niemann, L.; Ritz, V.; Ulbrich, B.; Gall, A.; Hirsch-Ernst, K. I.; Pfeil, R.; Solecki, R.	Regulatory Toxicology and Pharmacology, (2014) Vol. 70, No. 3, pp. 590-604. CODEN: RTOPDW. ISSN: 0273-2300.	Non-relevant by full text	No glyphosate specific information was presented in this paper and therefore this article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate-based herbicide induces toxic effects on human adipose-derived mesenchymal stem cells grown in human plasma.	Melo, M. I. A. de; Cunha, P. da S.; Martins, T. M. da M.; Miranda, M. C. de; Gomes, D. A.; Goes, A. M. de; Novato-Silva, E.; da M. Martins, T. M.; de Melo, M. I. A.; de Miranda, M. C.; de Goes, A. M.	Comparative Clinical Pathology (2018), Volume 27, Number 4, pp. 989-1000, 34 refs. ISSN: 1618-5641 DOI: 10.1007/s00580-018-2692-7 Published by: Springer Science + Business Media, London URL (Availability): https://link.springer.com/article/10.1007/s00580-018-2692-7	Non-relevant by full text	Glyphosate based herbicide tested in an in vitro system.			
Cytotoxicity on human cells of Cry1Ab and Cry1Ac Bt insecticidal toxins alone or with a glyphosate-based herbicide.	Mesnage R Clair E; Gress S; Then C; Szekacs A; Seralini G-E	Journal of applied toxicology : JAT, (2013 Jul) Vol. 33, No. 7, pp. 695-9. Electronic Publication Date: 15 Feb 2012 Journal code: 8109495. E-ISSN: 1099-1263. L-ISSN: 0260-437X.	Non-relevant by full text	Not only was the glyphosate based herbicide formulation tested together with other substances (Roundup GT Plus containing 450 g/L glyphosate), this is not the representative formulation, the article is not relevant to the renewal.			
Transcriptome profile analysis reflects rat liver and kidney damage following chronic ultra-low dose Roundup exposure.	Mesnage Robin; Antoniou Michael N Arno Matthew Costanzo Manuela; Malatesta Manuela Seralini Gilles-Eric	Environmental health : a global access science source, (2015 Aug 25) Vol. 14, pp. 70. Electronic Publication Date: 25 Aug 2015 Journal code: 101147645. E-ISSN: 1476-069X. L-ISSN: 1476-069X. Report No.: NLM-PMC4549093; PMC-PMC4549093.	Non-relevant by full text	Formulation tested (Grand Travaux Plus (450 g/L, Belgium) for non-validated endpoints.			
Multiomics reveal non-alcoholic fatty liver disease in rats following chronic exposure to an ultra-low dose of Roundup herbicide (vol 7, 39328, 2017).	Mesnage, Robin; Renney, George; Seralini, Gilles-Eric; Ward, Malcolm; Antoniou, Michael N. [Reprint Author]	Scientific Reports, (AUG 17 2018) Vol. 8, pp. Article No.: 12572. http://www.nature.com/srep . ISSN: 2045-2322. E-ISSN: 2045-2322.	Non-relevant by full text	The Roundup formulation tested in rats is not the representative formulation, and the article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Development of a multi-residue method in a fetal matrix: analysis of meconium	Meyer-Monath, Marie; Chatellier, Claudine; Rouget, Florence; Morel, Isabelle; Lestremay, Francois	Analytical and Bioanalytical Chemistry, (2014) Vol. 406, No. 30, pp. 7785-7797. CODEN: ABCNBP. ISSN: 1618-2642.	Non-relevant by full text	This is primarily an analytical method paper for determination of multiple analytes (including glyphosate) in meconium. Actual meconium samples were analyzed. Minimal details of results provided, and no detections of glyphosate reported, therefore the report is not relevant.			
Genotoxic effects of the herbicide Roundup Transorb and its active ingredient glyphosate on the fish <i>Prochilodus lineatus</i> .	Moreno Natalia Cestari Sofia Silvia Helena Martinez Claudia B R	Environmental toxicology and pharmacology, (2014 Jan) Vol. 37, No. 1, pp. 448-54. Electronic Publication Date: 31 Dec 2013 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	Formulation tested (Roundup Transorb®(480 g glyphosate /L, Monsanto doBrazil Ltda)			Y
Diminished brain resilience syndrome: A modern day neurological pathology of increased susceptibility to mild brain trauma, concussion, and downstream neurodegeneration.	Morley Wendy A Seneff Stephanie	Surgical neurology international, (2014) Vol. 5, pp. 97. Electronic Publication Date: 18 Jun 2014 Journal code: 101535836. ISSN: 2229-5097. L-ISSN: 2152-7806. Report No.: NLM-PMC4093745; PMC-PMC4093745.	Non-relevant by full text	Many hypotheses are discussed in this study with no data presented that could be used in a renewal dossier.			
Validity of reported indicators of pesticide exposure and relevance for cytotoxic and genotoxic effects on buccal cells.	Moshhammer, Hanns (correspondence); Khan, Abdul Wali; Wallner, Peter; Poteser, Michael; Kundi, Michael; Hutter, Hans-Peter Khan, Abdul Wali Wallner, Peter; Hutter, Hans-Peter	Mutagenesis, (29 May 2019) Vol. 34, No. 2, pp. 147-152. arn. gey043. Refs: 19 ISSN: 0267-8357; E-ISSN: 1464-3804 CODEN: MUTAEX	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate as the association between pesticide use in general and genotoxicity and cytotoxicity markers in buccal cells was studied only, and not specifically glyphosate.			
Changes in oxidative markers, endogenous antioxidants and activity of the enzyme acetylcholinesterase in farmers exposed to agricultural pesticides - a pilot study	Murussi, Camila; Horn, Roberta Cattaneo; Santi, Adriana; Clasen, Barbara Estevo; Reis, Gabriel; Souza, Daniela; Bortolotto, Josiane Woutheres; Manfio, Candida Elisa; Loro, Vania Lucia	Ciencia Rural, (2014) Vol. 44, No. 7, pp. 1186-1193. CODEN: CIRUEP. ISSN: 0103-8478.	Non-relevant by full text	This pilot study evaluated the use of general pesticides only with a comparison between treated and non-treated. Glyphosate alone was not evaluated and as a result this study cannot be used in the renewal dossier.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Health symptoms associated with pesticides exposure among flower and onion pesticide applicators in Arusha region.	Mwabulambo, Suten Geoffrey, MSc EOH (correspondence); Mrema, Ezra Jonathan; Vera Ngowi, Aiwerasia; Mamuya, Simon	Annals of Global Health, (2018) Vol. 84, No. 3, pp. 369-379. Refs: 21 ISSN: 2214-9996	Non-relevant by full text	This document describes the use of PPE during general occupational pesticide use and is not relevant to the glyphosate renewal dossier.			
Systematic review of comparative studies assessing the toxicity of pesticide active ingredients and their product formulations.	Nagy Karoly Duca Radu Corneliu Lovas Szabolcs Creta Matteo Scheepers Paul T J Godderis Lode Adam Balazs	Environmental research, (2019 Nov 20) pp. 108926. Electronic Publication Date: 20 Nov 2019 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Non-relevant by full text	This is a review paper with no new data presented. Therefore is not relevant to the glyphosate risk assessments.			
Prepubertal subchronic exposure to soy milk and glyphosate leads to endocrine disruption.	Nardi Jessica Moras Patricia Bonamigo; Koeppe Carina; Rossato-Grando Luciana Grazziotin Dallegrave Eliane Leal Mirna Bainy	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2017 Feb) Vol. 100, pp. 247-252. Electronic Publication Date: 23 Dec 2016 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 027	Non-relevant by full text	A paper describing a glyphosate formulation co-dosed with phytoestrogen. As this is a mixture the effects cannot be determined for glyphosate alone and thus the paper is not relevant for the renewal dossier.			
Effect of glyphosate on hematological and biochemical parameters of Rabbit (<i>Oryctolagus cuniculus</i>)	Naz, Sanam ; Iqbal, Razia ; Ahmad, Aftab ; Malik, Muhammad Faheem ; Jabbar, Muhammad ; Yaqoob, Rashid ; Saeed, Muhammad ; Hussain, Abid ; Aziz, Tahir ; Haider, Syed Usman ; Razaq, Abdul	Pure and Applied Biology, Vol. 8, No. 1, pp. 78-92, 20190301 E-ISSN: 2304-2478 DOI: 10.19045/bspab.2018.700166 Published by: International Society of Pure and Applied Biology, Quetta	Non-relevant by full text	Rabbits gavaged with a glyphosate based herbicide (Glyphosate comprised 48% of the formulation with another 48% glyphosate IPA (isopropylammonium) salt) sourced in Pakistan. As this is not the representative formulation, and the article is not relevant to the renewal.			
Exposure to glyphosate- and/or Mn/Zn-ethylene-bis-dithiocarbamate-containing pesticides leads to degeneration of γ -aminobutyric acid and dopamine neurons in <i>Caenorhabditis elegans</i> .	Negga Rekek Stuart J Andrew; Machen Morgan L; Salva Joel; Lizek Amanda J; Richardson S Jayne; Osborne Amanda S; Mirallas Oriol; McVey Kenneth A; Fitsanakis Vanessa A	Neurotoxicity research, (2012 Apr) Vol. 21, No. 3, pp. 281-90. Electronic Publication Date: 16 Sep 2011 Journal code: 100929017. E-ISSN: 1476-3524. L-ISSN: 1029-8428. Report No.: NLM-NIHMS335718; NLM-PMC3288661; PMC-PMC3288661; MID-NIHMS335718.	Non-relevant by full text	This study describes invertebrate tests performed using a glyphosate based herbicide. As this is not the representative formulation, and the article is not relevant to the renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Chemical pesticide use and quality of life of rubber farmers in the Northeast of Thailand.	Nippanon, P.; Tantriratna, P.; Laohasiriwong, W. Sriyacha, Chanaphol (correspondence) Phajan, T.; Suwannaphant, K.	Kathmandu University Medical Journal, (January-March 2019) Vol. 17, No. 65. Refs: 16 ISSN: 1812-2027; E-ISSN: 4812-2078	Non-relevant by full text	A paper evaluating the handling of agrochemicals as a risk factor, rather than individual pesticides. Similarly, only the percentage of farmers using glyphosate was reported.			
Unilateral hippocampal infarction associated with an attempted suicide: a case report.	Nishiyori Yasushi; Shioda Katsutoshi; Suda Shiro; Kato Satoshi Nishida Masaki	Journal of medical case reports, (2014 Jun 23) Vol. 8, pp. 219. Electronic Publication Date: 23 Jun 2014 Journal code: 101293382. E-ISSN: 1752-1947. L-ISSN: 1752-1947. Report No.: NLM-PMC4088294; PMC-PMC4088294.	Non-relevant by full text	Glyphosate does not cross the blood brain barrier and does not cause neurotoxicity. Nor would it be expected that glyphosate ingestion unilaterally targets the dorsal part of the left hippocampus. This presentation is much more consistent with a small vessel embolic event and the patient should have been evaluated for risk factors for stroke such as atrial fibrillation or carotid atherosclerosis. Not relevant for the risk assessment.			
Toxicity Ranking and Toxic Mode of Action Evaluation of Commonly Used Agricultural Adjuvants on the Basis of Bacterial Gene Expression Profiles	Nobels, Ingrid (Reprint); Robbens, Johan; Blust, Ronny Spanoghe, Pieter Haesaert, Geert Haesaert, Geert	PLOS ONE, (18 NOV 2011) Vol. 6, No. 11. ISSN: 1932-6203.	Non-relevant by full text	A study on commonly used adjuvants and solvents in pesticide formulations, however no glyphosate or Roundup specific data is mentioned therefore the study is not relevant for the renewal dossier.			
Robust and highly sensitive micro liquid chromatography-tandem mass spectrometry method for analyses of polar pesticides (glyphosate, aminomethylphosphonic acid, N-acetyl glyphosate and N-acetyl aminomethylphosphonic acid) in multiple biological matrices.	Norskov Natalja P Jensen Soren Krogh; Sorensen Martin Tang	Journal of chromatography. A, (2019 Nov 08) Vol. 1605, pp. 360343. Electronic Publication Date: 2 Jul 2019 Journal code: 9318488. E-ISSN: 1873-3778. L-ISSN: 0021-9673.	Non-relevant by full text	This paper concerns development of a glyphosate assay and is likely a precursor to a gut microbe study. No animal data and no information relevant for the risk assessment were presented.			
Histopathological and biochemical responses to the oxidative stress induced by glyphosate-based herbicides in the rainbow trout (Oncorhynchus mykiss)	Nur, Gokhan (correspondence); Deveci, Haci Ahmet	Journal of Cellular Neuroscience and Oxidative Stress, (2018) Vol. 10, No. 1, pp. 656-665. Refs: 49 E-ISSN: 2149-7222	Non-relevant by full text	A glyphosate based herbicide was tested in aquatic species, without positive control to verify validity of the assay. Gill damage is directly attributable to the surfactant present in the formulation, with oxidative stress a consequence of cell damage.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Induction of micronuclei and nuclear lesions in <i>Channa punctatus</i> following exposure to carbosulfan, glyphosate and atrazine.	Nwani Christopher Didigwu Nagpure Naresh Sahebrao; Kumar Ravindra; Kushwaha Basdeo; Kumar Pavan; Lakra Wazir Singh	Drug and chemical toxicology, (2014 Oct) Vol. 37, No. 4, pp. 370-7. Electronic Publication Date: 11 Dec 2013 Journal code: 7801723. E-ISSN: 1525-6014. L-ISSN: 0148-0545.	Non-relevant by full text	A glyphosate based herbicide (Roundup SL; India; 41% soluble liquid) was tested in aquatic species. This study discusses cellular and molecular level end-points that are not relevant to an EU level ecotoxicology risk assessment.		Y	Y
Antioxidant effect of ginger on the pituitary-gonadal axis hormones recovered from the devastating effects of the herbicide Glyphosate in female rats	Owring, I.; Najafian, M.; Johari, H.	International Journal of Biology, Pharmacy and Allied Sciences, (2013) Vol. 2, No. 8, pp. 1606-1616, 11 pp.. CODEN: IJBPA. ISSN: 2277-4998.	Non-relevant by full text	Dosing via i.p. injection daily for three weeks is not relevant. The glyphosate source is not described at all. It is not clear whether this study dosed a glyphosate based herbicide, a technical acid or salt.			
Inflammatory Effects of Subacute Exposure of Roundup in Rat Liver and Adipose Tissue.	Pandey Aparamita; Kumarasamy Anand Dhabade Prachi	Dose-response : a publication of International Hormesis Society, (2019 Apr-Jun) Vol. 17, No. 2, pp. 1559325819843380. Electronic Publication Date: 23 May 2019 Journal code: 101308899. ISSN: 1559-3258. L-ISSN: 1559-3258. Report No.: PMC-PMC6537504.	Non-relevant by full text	The formulation tested in this study (Herbicide Roundup, 41% w/w glyphosate, Monsanto India Ltd, Mumbai, India) is not the representative formulation and is not relevant to the renewal.			
Aminomethylphosphonic acid and methoxyacetic acid induce apoptosis in prostate cancer cells.	Parajuli Keshab R; Zhang Qiuyang; Liu Sen; You Zongbing	International journal of molecular sciences, (2015 May 22) Vol. 16, No. 5, pp. 11750-65. Electronic Publication Date: 22 May 2015 Journal code: 101092791. E-ISSN: 1422-0067. L-ISSN: 1422-0067. Report No.: NLM-PMC4463728; PMC-PMC4463728.	Non-relevant by full text	In this study the therapeutic use of AMPA was evaluated rather than glyphosate. Therefore it is not relevant to the renewal.			
Aminomethylphosphonic acid inhibits growth and metastasis of human prostate cancer in an orthotopic xenograft mouse model.	Parajuli Keshab Raj; Zhang Qiuyang; Liu Sen; You Zongbing You Zongbing You Zongbing You Zongbing You Zongbing	Oncotarget, (2016 Mar 01) Vol. 7, No. 9, pp. 10616-26. Journal code: 101532965. E-ISSN: 1949-2553. L-ISSN: 1949-2553. Report No.: NLM-PMC4891145; PMC-PMC4891145.	Non-relevant by full text	In this study the therapeutic use of AMPA was evaluated rather than glyphosate. Therefore it is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Comment on 'Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats', Arch Toxicol 92:2629-2643 : On the impairment of female reproductive performance by developm	Paumgarten Francisco J R	Archives of toxicology, (2019 Mar) Vol. 93, No. 3, pp. 831-832. Electronic Publication Date: 6 Feb 2019 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Non-relevant by full text	Letter refers to a previous paper published by Milesi et al (Perinatal exposure to a glyphosate-based herbicide impairs.; Arch Toxicol 2018, 92(8):2629-2643.); Milesi et al is not in Marian's LRR2 list.			
Influence of a Roundup formulation on glyphosate effects on steroidogenesis and proliferation of bovine granulosa cells in vitro.	Perego Maria Chiara; Schutz Luis F; Tsuzukibashi Denise; Spicer Leon J Caloni Francesca Cortinovia Cristina; Albonico Marco	Chemosphere, (2017 Dec) Vol. 188, pp. 274-279. Electronic Publication Date: 4 Sep 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	This study examines the in vitro formulation effects only, rather than glyphosate alone.			
Beneficial Effects of the Amino Acid Glycine.	Perez-Torres Israel; Zuniga-Munoz Alejandra Maria Guarner-Lans Veronica	Mini reviews in medicinal chemistry, (2017) Vol. 17, No. 1, pp. 15-32. Journal code: 101094212. E-ISSN: 1875-5607. L-ISSN: 1389-5575.	Non-relevant by full text	This paper does not contain any data pertaining to glyphosate and is therefore not relevant.			
Priority Setting for Occupational Cancer Prevention.	Peters, Cheryl E. (correspondence); Peters, Cheryl E. (correspondence); Palmer, Alison L.; Telfer, Joanne Ge, Calvin B. Hall, Amy L.; Davies, Hugh W. Pahwa, Manisha; Demers, Paul A. Demers, Paul A. Peters, Cheryl E. (correspondence)	Safety and Health at Work, (June 2018) Vol. 9, No. 2, pp. 133-139. Refs: 30 ISSN: 2093-7911; E-ISSN: 2093-7997	Non-relevant by full text	This paper does not contain any data pertaining to glyphosate and is therefore not relevant			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Differences in the carcinogenic evaluation of glyphosate between the International Agency for Research on Cancer (IARC) and the European Food Safety Authority (EFSA).	Portier Christopher J Armstrong Bruce K Baguley Bruce C Baur Xavier Belyaev Igor Belle Robert Belpoggi Fiorella Biggeri Annibale Bosland Maarten C Bruzzi Paolo Budnik Lygia Therese Bugge Merete D Burns Kathleen Calaf Gloria M Carpenter David O Carpenter Hi	Journal of epidemiology and community health, (20160800) Vol. 70, No. 8, pp. 741-5. Electronic Publication Date: 3 Mar 2016 Journal code: 7909766. E-ISSN: 1470-2738. L-ISSN: 0143-005X. Report No.: PMC-PMC4975799.	Non-relevant by full text	This publication is considered not relevant because it is not based on experimental data.			
A Pilot Study in Cameroon to Understand Safe Uses of Pesticides in Agriculture, Risk Factors for Farmers' Exposure and Management of Accidental Cases.	Pouokam Guy Bertrand Lemnyuy Album William Ndikontar Alice S Sidatt Mohamed El Hady	Toxics, (2017 Nov 01) Vol. 5, No. 4. Electronic Publication Date: 1 Nov 2017 Journal code: 101639637. E-ISSN: 2305-6304. L-ISSN: 2305-6304. Report No.: PMC-PMC5750558.	Non-relevant by full text	This paper does not contain any data pertaining to glyphosate and is therefore not relevant.			
Toxic effects of glyphosate on intestinal morphology, antioxidant capacity and barrier function in weaned piglets.	Qiu Shengnan; Fu Huiyang; Zhou Ruiying; Yang Zheng; Bai Guangdong Shi Baoming	Ecotoxicology and environmental safety, (2020 Jan 15) Vol. 187, pp. 109846. Electronic Publication Date: 31 Oct 2019 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	This study investigates glyphosate based herbicides dosed to piglets. As this is not the representative formulation, and the article is not relevant to the renewal.			
Assaults on health.	Ramsden, J. J.	Journal of Biological Physics and Chemistry, (2017) Vol. 17, No. 1, pp. 3-7. ISSN: 1512-0856. E-ISSN: 1512-0856.	Non-relevant by full text	Commentary on various threats to human health and not directly relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Maternal residential exposure to specific agricultural pesticide active ingredients and birth defects in a 2003-2005 North Carolina birth cohort.	Rappazzo Kristen M; Luben Thomas J Rappazzo Kristen M Warren Joshua L Davalos Angel D Meyer Robert E Meyer Robert E Sanders Alison P Sanders Alison P Brownstein Naomi C Brownstein Naomi C	Birth defects research, (2019 Apr 01) Vol. 111, No. 6, pp. 312-323. Electronic Publication Date: 28 Dec 2018 Journal code: 101701004. E-ISSN: 2472-1727. Report No.: PMC-PMC6445756; MID-NIHMS1002515.	Non-relevant by full text	Highly speculative exposure assessment limited to pesticides makes it impossible to adequately assess results. Therefore this study is not relevant.			
Council on Environmental Health. Technical Report: Pesticide Exposure in Children (vol 130, pg e1765, 2012).	Robert, J. R.; Karr, C. J.	Pediatrics, (MAY 2013) Vol. 131, No. 5, pp. 1013-1014. CODEN: PEDIAU. ISSN: 0031-4005. E-ISSN: 1098-4275.	Non-relevant by full text	This paper does not contain any data pertaining to glyphosate and is therefore not relevant.			
Special issue on pesticide contamination and toxicology. Numero especial: Contaminacion y toxicologia por plaguicidas	Rojas Garcia, A. E.; Sanchez-Alarcon, J.; Gomez-Arroyo, S.; Valencia-Quintana, R. Editor(s): Rojas Garcia, A. E.; Sanchez-Alarcon, J.; Gomez-Arroyo, S.; Valencia-Quintana, R.	Revista Internacional de Contaminacion Ambiental (2018), Volume 34, Number Numero Especial, pp. i + 7-105 ISSN: 0188-4999 Published by: Universidad Nacional Autonoma de Mexico, Ciudad de Mexico URL (Availability): http://www.revistascca.unam.mx/rica/index	Non-relevant by full text	A special issue with seven articles that were either reviews discussing glyphosate, or not relevant to glyphosate.			
Glyphosate impairs male offspring reproductive development by disrupting gonadotropin expression.	Romano Marco Aurelio Romano Renata Marino; Santos Luciana Dalazen; Wisniewski Patricia; Campos Daniele Antonelo; de Souza Paula Bargi; Viau Priscila; Bernardi Maria Martha; Nunes Maria Tereza; de Oliveira Claudio Alvarenga	Archives of toxicology, (2012 Apr) Vol. 86, No. 4, pp. 663-73. Electronic Publication Date: 26 Nov 2011 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because a formulation (Roundup Transorb) has been tested instead of glyphosate.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Prepubertal exposure to commercial formulation of the herbicide glyphosate alters testosterone levels and testicular morphology.	Romano R M Romano M A; Bernardi M M; Furtado P V; Oliveira C A	Archives of toxicology, (2010 Apr) Vol. 84, No. 4, pp. 309-17. Electronic Publication Date: 12 Dec 2009 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Non-relevant by full text	The test material was a glyphosate-based formulation and not the reference formulation MON 52276.			Y
Reply to comment of John M. DeSesso and Amy L. Williams regarding "Glyphosate impairs male offspring reproductive development by disrupting gonadotropin expression" by Romano et al. 2012	Romano, Marco A. [Reprint Author]; Romano, Renata M.	Archives of Toxicology, (NOV 2012) Vol. 86, No. 11, pp. 1795-1797. http://www.springerlink.com/content/100462/ . CODEN: ARTODN. ISSN: 0340-5761. E-ISSN: 1432-0738.	Non-relevant by full text	reflect the categorization of the original article (1165) which was classified as not relevant			
The teratogenic effects of glyphosate based herbicide (GBH) on the development of chick embryos.	Roongruangchai, J.; Viravud, Y.; Plakornkul, V.; Sripaoraya, K.; Vijitsombat, N.; Roongruangchai, K.; Jantima Roongruangchai; Yadaridee Viravud; Vasana Plakornkul; Kesorn Sripaoraya; Naruemol Vijitsombat; Kosol Roongruangchai	Siriraj Medical Journal (2018), Volume 70, Number 5, pp. 419-428, 23 refs. ISSN: 2629-995X Published by: Faculty of Medicine, Siriraj Hospital, Mahidol University, Bangkok URL (Availability): http://www.smj.si.mahidol.ac.th/sirirajmedj/index.php/smj/arti	Non-relevant by full text	This report studies the injection of glyphosate based fertilisers into fertilized chicken eggs. As this is not the representative formulation, the article is not relevant to the renewal.			
A 52-week feeding study of genetically modified soybeans in F344 rats.	Sakamoto Yoshimitsu; Tada Yukie; Fukumori Nobutaka; Tayama Kuniaki; Ando Hiroshi; Takahashi Hiroshi; Kubo Yoshikazu; Nagasawa Akemichi; Yano Norio; Yuzawa Katsuhiro; Ogata Akio; Kamimura Hisashi	Shokuhin eiseigaku zasshi. Journal of the Food Hygienic Society of Japan, (2007 Jun) Vol. 48, No. 3, pp. 41-50.	Non-relevant by full text	No glyphosate data included in the article.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Occupational Exposure to Agrochemicals, Risks and Safety Practices in Family Agriculture in a Municipality of the State of Espirito Santo, Brazil (P04-077-19).	Salaroli Luciane Petarli Glenda; Cattafesta Monica; Luz Tamires Conceicao Da; Zandonade Eliana Bezerra Olivia Maria De Paula Alves	Current developments in nutrition, (2019 Jun) Vol. 3, No. Suppl 1. Electronic Publication Date: 13 Jun 2019 Journal code: 101717957. E-ISSN: 2475-2991. L-ISSN: 2475-2991. Report No.: PMC-PMC6579450.	Non-relevant by full text	General pesticide review of occupational exposures and safety practices and not relevant for the renewal.			
Glyphosate, pathways to modern diseases II: Celiac sprue and gluten intolerance.	Samsel Anthony Seneff Stephanie	Interdisciplinary toxicology, (2013 Dec) Vol. 6, No. 4, pp. 159-84. Journal code: 101528175. ISSN: 1337-6853. L-ISSN: 1337-6853. Report No.: NLM-PMC3945755; PMC-PMC3945755.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.			
Glyphosate, pathways to modern diseases III: Manganese, neurological diseases, and associated pathologies.	Samsel Anthony Seneff Stephanie	Surgical neurology international, (2015) Vol. 6, pp. 45. Electronic Publication Date: 24 Mar 2015 Journal code: 101535836. ISSN: 2229-5097. L-ISSN: 2152-7806. Report No.: NLM-PMC4392553; PMC-PMC4392553.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.			
Glyphosate's suppression of cytochrome P450 enzymes and amino acid biosynthesis by the gut microbiome: pathways to modern diseases	Samsel, Anthony; Seneff, Stephanie	Entropy, (2013) Vol. 15, pp. 1416-1463. CODEN: ENTRFG. ISSN: 1099-4300.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.			
Glyphosate, pathways to modern diseases IV: cancer and related pathologies.	Samsel, Anthony; Seneff, Stephanie [Reprint Author]	Journal of Biological Physics and Chemistry, (2015) Vol. 15, No. 3, pp. 121-159. ISSN: 1512-0856. E-ISSN: 1512-0856.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate pathways to modern diseases V: Amino acid analogue of glycine in diverse proteins.	Samsel, Anthony; Seneff, Stephanie [Reprint Author]	Journal of Biological Physics and Chemistry, (2016) Vol. 16, No. 1, pp. 9-46. ISSN: 1512-0856. E-ISSN: 1512-0856.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.			
Glyphosate pathways to modern diseases VI: Prions, amyloidosis and autoimmune neurological diseases.	Samsel, Anthony; Seneff, Stephanie [Reprint Author]	Journal of Biological Physics and Chemistry, (2017) Vol. 17, No. 1, pp. 8-32. ISSN: 1512-0856. E-ISSN: 1512-0856.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because it is not based on experimental work and no epidemiologic methodology was followed.			
Agricultural chemical exposure in small farmers in Guyana.	Spiller, Henry A.; Aleguas, Alfred	Toxicological and Environmental Chemistry, (2008) Vol. 90, No. 2, pp. 361-365. http://www.tandfonline.com/loi/gtec20	Non-relevant by full text	Publication describes general pesticide exposures (not glyphosate specific)			
Antioxidant defense system in rats simultaneously intoxicated with agrochemicals.	Astiz, Mariana; De Alaniz, Maria J. T.; Alberto Marra, Carlos	Environmental Toxicology and Pharmacology, (NOV 2009) Vol. 28, No. 3, pp. 465-473. http://www.journals.elsevier.com/environmental-toxicology-and-pharmacology/#description . ISSN: 1382-6689. E-ISSN: 1872-7077.	Non-relevant by full text	Non-relevant route of exposure (i.p. injections)	Y		
Environmental and Occupational Exposures in Kidney Disease.	Scammell, Madeleine K.; Sennett, Caryn M.; Petropoulos, Zoe E. Kamal, Jeanne; Kaufman, James S., MD (correspondence) Kaufman, James S., MD (correspondence) Kaufman, James S., MD (correspondence)	Seminars in Nephrology, (May 2019) Vol. 39, No. 3, pp. 230-243. Refs: 96 ISSN: 0270-9295; E-ISSN: 1558-4488 CODEN: SNEPDJ	Non-relevant by full text	This paper does not contain any new data pertaining to glyphosate and is therefore not relevant.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Genotoxicity induced by Roundup® (Glyphosate) in tegu lizard (Salvator merianae) embryos.	Schaumburg Laura G Siroski Pablo A Poletta Gisela L Mudry Marta D	Pesticide biochemistry and physiology (2016 Jun) Vol. 130, pp. 71-78. Electronic Publication Date: 3 Dec 2015 Journal code: 1301573. E-ISSN: 1095-9939. L-ISSN: 0048-3575.	Non-relevant by full text	A glyphosate based herbicide was tested in lizard eggs. As this was not the representative formulation the article is not relevant to the renewal.			Y
Assessment of oxidative DNA damage by glyphosate applying hOGG1 modified comet and micronucleus assay	Mladinic, M; Zeljezic, D	Toxicology Letters [Toxicol. Lett.]. Vol. 180, pp. S170-S171. 5 Oct 2008. ISSN: 0378-4274 DOI: 10.1016/j.toxlet.2008.06.276 Published by: Elsevier Science, Elsevier House, Brookvale Plaza East Park Shannon, Co. Clare Ireland, [mailto:nlinfo-f@elsevier.nl], [URL:http://www.elsevier.nl/]	Non-relevant by full text	Abstract only; data presented refer to Mladinic et al. 2009			
[High frequency hearing among rural workers exposed to pesticides] Audicao em altas frequencias em trabalhadores rurais expostos a agrototoxicos	Sena Tereza Raquel Ribeiro de; Antonioli Angelo Roberto Dourado Solano Savio Figueiredo	Ciencia & saude coletiva, (2019) Vol. 24, No. 10, pp. 3923-3932. Electronic Publication Date: 26 Sep 2019 Journal code: 9713483. E-ISSN: 1678-4561. L-ISSN: 1413-8123.	Non-relevant by full text	No glyphosate specific data, confounded due to multiple pesticide uses therefore cannot be used in the renewal.			
Death as a drug side effect in FAERS: is glyphosate contamination a factor?	Seneff, S.; Swanson, N.; Li Chen; Koenig, G.; Li C.	Agricultural Sciences (2015), Volume 6, Number 12, pp. 1472-1501, 133 refs. ISSN: 2156-8553 DOI: 10.4236/as.2015.612143 Published by: Scientific Research Publishing, Irvine URL (Availability): http://file.scirp.org/Html/7-3001295_62258.htm	Non-relevant by full text	Within this report, hypotheses are discussed without any empirical data. Therefore it is not relevant to the renewal.			
Aluminum and glyphosate can synergistically induce pineal gland pathology: connection to gut dysbiosis and neurological disease.	Seneff, S.; Swanson, N.; Li, C.	Agricultural Sciences (2015), Volume 6, Number 1, pp. 42-70, 187 refs. ISSN: 2156-8553 Published by: Scientific Research Publishing, Irvine URL (Availability): http://file.scirp.org/Html/5-3000951_53106.htm	Non-relevant by full text	This paper is not relevant as it is not based on experimental work and no epidemiologic methodology was followed. Conclusion (glyphosate and aluminium, operate synergistically to induce dysfunction in the pineal gland leading to the sleep disorder that is characteristic of multiple neurological diseases, including autism, ADHD, depression, Alzheimer's disease, ALS, anxiety disorder and Parkinson's disease) is pure speculation and is not corroborated by current experimental data.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Can glyphosate's disruption of the gut microbiome and induction of sulfate deficiency explain the epidemic in gout and associated diseases in the industrialized world?.	Seneff, Stephanie [Reprint Author]; Causton, Nicholas J.; Nigh, Gregory L.; Koenig, Gerald; Avalon, Dette	Journal of Biological Physics and Chemistry, (2017) Vol. 17, No. 2, pp. 53-76. ISSN: 1512-0856. E-ISSN: 1512-0856.	Non-relevant by full text	Study is not relevant as it is not based on experimental work and no epidemiologic methodology was followed. Results and proposed mode of actions are speculation without any experimental proof.			
Is encephalopathy a mechanism to renew sulfate in autism?	Seneff, Stephanie; Lauritzen, Ann; Davidson, Robert M.; Lentz-Marino, Laurie	Entropy, (2013) Vol. 15, pp. 372-406. CODEN: ENTRFG. ISSN: 1099-4300.	Non-relevant by full text	Hypothesis presented without data			
Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize.	Seralini Gilles-Eric; Clair Emilie; Mesnage Robin; Gress Steeve; Defarge Nicolas; Malatesta Manuela; Hennequin Didier; de Vendomois Joel; Spiroux	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2012 Nov) Vol. 50, No. 11, pp. 4221-31. Electronic Publication Date: 19 Sep 2012 Journal code: 8207483. E-ISSN: 1873-6351. L-IS	Non-relevant by full text	Retraction announcement from Journal			
Republished study: long-term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize.	Seralini Gilles-Eric; Clair Emilie; Mesnage Robin; Gress Steeve; Defarge Nicolas; de Vendomois Joel; Spiroux; Malatesta Manuela; Hennequin Didier	Environmental sciences Europe, (2014) Vol. 26, No. 1, pp. 14. Electronic Publication Date: 24 Jun 2014 Journal code: 101571842. ISSN: 2190-4707. L-ISSN: 2190-4715. Report No.: PMC-PMC5044955.	Non-relevant by full text	This publication is considered not relevant for risk assessment of glyphosate because a glyphosate formulation was used instead of glyphosate.			
Conclusiveness of toxicity data and double standards	Seralini, G. E. (Reprint); Mesnage, R.; Defarge, N. Seralini, G. E. (Reprint); Mesnage, R.; Defarge, N. de Vendomois, J. Spiroux	FOOD AND CHEMICAL TOXICOLOGY, (JUL 2014) Vol. 69, pp. 357-359. ISSN: 0278-6915.	Non-relevant by full text	Commentary of Seralini paper retraction			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Conflicts of interests, confidentiality and censorship in health risk assessment: the example of an herbicide and a GMO.	Seralini, G. E.; Mesnage, R.; Defarge, N.; Vendomois, J. S. de; de Vendomois, J. S.	Environmental Sciences Europe (2014), Volume 26, Number 13, (24 June 2014) p., 51 refs. ISSN: 2190-4715 Published by: SpringerOpen, Heidelberg URL (Availability): http://www.enveurope.com/content/pdf/s12302-014-0013-6.pdf	Non-relevant by full text	This is a commentary article and not relevant.			
Why glyphosate is not the issue with Roundup A short overview of 30 years of our research.	Seralini, Gilles-Eric [Reprint Author]	Journal of Biological Physics and Chemistry, (2015) Vol. 15, No. 3, pp. 111-119. ISSN: 1512-0856.	Non-relevant by full text	A review of glyphosate vs formulations. Secondary source of information, not experimental data presented.			
Clastogenic Effects of Glyphosate in Bone Marrow Cells of Swiss Albino Mice	Prasad, Sahdeo; Srivastava, Smita; Singh, Madhulika; Shukla, Yogeshwer	Journal of Toxicology [J. Toxicol.], Vol. 2009, [np]. 2009. ISSN: 1687-8191 E-ISSN: 1687-8205 DOI: 10.1155/2009/308985 Published by: Hindawi Publishing Corporation, P.O. Box 3079	Non-relevant by full text	This study applied 2 in vivo genotoxicity tests, both with obvious deviations to current guidelines. The i.p. route of exposure used for the micronucleus and chromosomal aberration assay renders the study irrelevant for human exposure.	Y	Y	
Cytogenetic biomonitoring of Brazilian workers exposed to pesticides: Micronucleus analysis in buccal epithelial cells of soybean growers.	Moura De Bortoli, Giorgia; Barbieri De Azevedo, Mariana; Basso Da Silva, Luciano.	Mutat. Res., Genet. Toxicol. Environ. Mutagen., Volume 675, Issue 1-2, Page 1-4, Publication Year 2009	Non-relevant by full text	MNT analysis of buccal epithelial cells of soybean growers. 29 Brazilian workers exposed to pesticides in soybean fields and in 37 non-exposed individuals. Participants were grouped according their smoking and drink habits. No defined information on exposure and the exposed substances were given.			
DNA damage in workers occupationally exposed to pesticide mixtures.	Simoniello, M. F.; Kleinsorge, E. C.; Scagnetti, J. A.; Grigolato, R. A.; Poletta, G. L.; Carballo, M. A.	J. Appl. Toxicol., Volume 28, Issue 8, Page 957-965, Publication Year 2008	Non-relevant by full text	Evaluation of 54 subjects occupationally exposed to a large number of pesticides (directly or indirectly) and 30 subjects as a control group using the quantification of DNA damage level by means of the alkaline Comet assay and the evaluation of repair processes. No defined information on time and/or way of exposure and the exposed substance (batch, manufacturer, analytics, adjuvants) were given.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate, alachor and maleic hydrazide have genotoxic effect on <i>Trigonella foenum-graecum</i> L	Siddiqui Sazada Meghvansi Mukesh K; Khan Shoukat Saeed	Bulletin of environmental contamination and toxicology, (2012 May) Vol. 88, No. 5, pp. 659-65. Electronic Publication Date: 4 Mar 2012 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Non-relevant by full text	Not valid to evaluate genotoxicity of herbicides on the plant species tested.	Y	Y	Y
Disrupting mitochondrial function with surfactants inhibits MA-10 Leydig cell steroidogenesis	Levine, S. L.; Han, Z.; Liu, J.; Farmer, D. R.; Papadopoulos, V.	Cell Biology and Toxicology, (2007) Vol. 23, No. 6, pp. 385-400. CODEN: CBTOE2. ISSN: 0742-2091.	Non-relevant by full text	The study results demonstrate how perturbation of the mitochondrial membrane by surfactants inhibits import, processing, and cholesterol transfer activity and underscore the importance of including sensitive assays that evaluate mitochondrial function when screening for potential effects on steroidogenesis with in vitro test systems. The roundup product tested contains 16.5% glyphosate-isopropylamine salt (which corresponds to approximately 12.2% glyphosate acid) and 6.1% MON 0818 (POEA). POEA is no longer in the composition of the representative formulation.			
Effect of pesticides on cell survival in liver and brain rat tissues.	Astiz Mariana; De Alaniz Maria J T; Marra Carlos Alberto	Ecotoxicology and environmental safety, (2009 Oct) Vol. 72, No. 7, pp. 2025-32. Electronic Publication Date: 2 Jun 2009	Non-relevant by full text	Non-relevant route of exposure (i.p. injections)	Y		
Glyphosate disrupts redox status and up-regulates metallothionein I and II genes expression in the liver of adult rats. Alleviation by quercetin.	Soudani Nejla Chaabane Mariem; Ghorbel Imen; Elwej Awatef; Boudawara Tahia; Zeghal Najiba	General physiology and biophysics, (2019 Mar) Vol. 38, No. 2, pp. 123-134. Electronic Publication Date: 1 Mar 2019 Journal code: 8400604. ISSN: 0231-5882. L-ISSN: 0231-5882.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because the route of administration used was not appropriate (intraperitoneal injection).			
Effects of the herbicide Roundup on the epididymal region of drakes <i>Anas platyrhynchos</i> .	Oliveira Andre G; Telles Luiz F; Hess Rex A; Mahecha German A B; Oliveira Cleida A	Reproductive toxicology (Elmsford, N.Y.), (2007 Feb) Vol. 23, No. 2, pp. 182-91. Electronic Publication Date: 11 Nov 2006	Non-relevant by full text	Study on male ducks (<i>Anas platyrhynchos</i>); non-relevant species for risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate-based herbicides at low doses affect canonical pathways in estrogen positive and negative breast cancer cell lines.	Stur Elaine; Agostini Lidiane Pignaton; Detogni Raquel Spinasse; Reis Raquel Silva Dos; Louro Iuri Drumond Stur Elaine; Agostini Lidiane Pignaton; Detogni Raquel Spinasse; Reis Raquel Silva Dos; Louro Iuri Drumond Aristizabal-Pachon Andres Felipe; Peronni	PloS one, (2019) Vol. 14, No. 7, pp. e0219610. Electronic Publication Date: 11 Jul 2019 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC6622539.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate as the concentration of AMPA used (10 mM) is beyond the physiologically acceptable range (> 1 mM). Evaluation of a glyphosate-based herbicide in in vitro systems is not relevant to the risk assessment of glyphosate due to the effects of surfactants on cells.			
Endocrine Disrupting Effects of Herbicides and Pentachlorophenol: In Vitro and in Vivo Evidence.	Orton, Frances; Lutz, Ilka; Kloas, Werner; Routledge, Edwin J.	Environ. Sci. Technol., Volume 43, Issue 6, Page 2144-2150, Publication Year 2009	Non-relevant by full text	12 environmentally relevant pesticides (11 herbicides and pentachlorophenol (PCP)) were tested for their endocrine disrupting potential in two in vitro assays. Glyphosate was not tested in the study. Xenopus oocytes were used to measure effects on the ovulatory response and ovarian steroidogenesis.			
Endocrine disruptors (ED) and human exposure	Lerda, D.	Research and Reviews in BioSciences, (2009) Vol. 3, No. 2-3, pp. 106-111. CODEN: RRBEAJ. ISSN: 0974-7532.	Non-relevant by full text	In occupational exposure studies, the exposed and control individuals blood, urine or sperm samples were used, mainly to determine the level of exposure. No defined information on time and/or way of exposure and the exposed substance (batch, manufacturer, analytics, adjuvants) were given. The levels of several pollutants were studied as well as other biochemical parameters related to exposure (gentox and mutagenesis, sperm quality, prostate, neurobehavior, cancer). The observed effect were not assignable to the reasoning chemical.			
Genetically engineered crops, glyphosate and the deterioration of health in the United States of America.	Swanson, N. L.; Leu, A.; Abrahamson, J.; Wallet, B.	Journal of Organic Systems (2014), Volume 9, Number 2, pp. 6-37 ISSN: 1177-4258 Published by: Journal of Organic Systems, Waitakere City URL (Availability): http://www.organic-systems.org/journal/92/JOS_Volume-9_Number-2_Nov_2014-Swanson-et-al.pdf	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because no epidemiological approach was followed to establish an association between exposure to glyphosate and disease outcome.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Erythema multiforme-like eruption due to an irritant contact dermatitis from a glyphosate pesticide.	Heras-Mendoza Felipe; Casado-Farinas Isabel; Paredes-Gascon Milagros; Conde-Salazar Luis	Contact dermatitis, (2008 Jul) Vol. 59, No. 1, pp. 54-6.	Non-relevant by full text	Case report 37 year old female gardener noticed redness on her arms which became eczematous on day 2. At 5 day erythematous-purpuric plaques appeared on the skin of the upper extremities as well as target-like lesions on the abdomen, axillae and groin. After recovery, patch tests performed with the Spanish Standard series (True Test and Chemotechnique) and the Pesticide series (Martí Tor, Barcelona, Spain) were negative. The observed irritant contact dermatitis (ICD) was developed by sweat or wet conditions. Additionally, she delayed rinsing off the herbicide. Tested product contains polyoxyethylene amine (POEA), which is no longer in the composition of the representative formulation.			
Studies on joint toxic effects of a glyphosate herbicide (Fozat 480) and a heavy metal (cadmium) on chicken embryos.	Szabo, R.; Szemeredy, G.; Kormos, E.; Lehel, J.; Budai, P.	AGROFOR International Journal (2017), Volume 2, Number 3, pp. 37-43, 12 refs. ISSN: 2490-3434 Published by: Faculty of Agriculture, University of East Sarajevo, Istocno Sarajevo URL (Availability): http://www.agrofor.rs.ba/data/20171117-AGROFOR%20Vol.2.%	Non-relevant by full text	Glyphosate based herbicide applied to fertilized chicken eggs, is not the representative formulation and not relevant to human health risk assessment.			
Evaluation of DNA damage in an Ecuadorian population exposed to glyphosate .	Paz-Y-Mino, Cesar; Sanchez, Maria Eugenia; Arevalo, Melissa; Munoz, Maria Jose; Witte, Tania; De-La-Carrera, Gabriela Oleas; Leone, Paola E.	Genetics and Molecular Biology, (2007) Vol. 30, No. 2, pp. 456-460. ISSN: 1415-4757.	Non-relevant by full text	This publication is assessed to be not relevant for human health risk assessment in the EU, as the glyphosate formulation (Roundup Ultra) was applied at much higher dose rates (20x maximum application rate) than recommended for the intended uses in the EU. Potential confounding effects from excess toxicity are thus compromising the relevance of this publication, especially since they were not sufficiently accounted for by the authors. In addition, the herbicide was combined with the adjuvant "Cosmoflux 411F", which will not be used in the EU, and might influence the results and interpretations drawn from the Comet Assay.	Y	Y	
Evaluation of bulky DNA adduct levels after pesticide use: comparison between open-field farmers and fruit growers.	Andre, Veronique; Le Goff, Jeremie; Pottier, Didier; Lebailly, Pierre; Peluso, Marco; Munnia, Armelle; Gauduchon, Pascal.	Toxicol. Environ. Chem., Volume 89, Issue 1, Page 125-139, Publication Year 2007	Non-relevant by full text	Groups of farmers were classified according to the main pesticide sprayed (triazoles or chlorothalonil for open-field farmers n=19; captan for fruit growers n=29). Two blood samples were collected on consecutive days for each farmer, and white blood cell bulky DNA adduct levels were evaluated by 32P-postlabelling method. Glyphosate was only detected in 1/29 farmers. No association between glyphosate exposure and bulky adducts was observed. Farmers were exposed to pesticide mixtures, no further information on exposure and the exposed substances (batch, manufacturer, analytics, adjuvants) were given.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
TOXICITY TEST OF INDIVIDUAL AND COMBINED TOXIC EFFECTS OF HERBICIDE GLIALKA STAR AND LEAD-ACETATE ON CHICKEN EMBRYOS. Original Title: GLIALKA STAR GYOMIRTO SZER ES AZ OLOM-ACETAT EGYEDI ES INTERAKCIOS TOXICITASANAK VIZSGALATA MADAREMBRIOKBAN.	Szemeredy Geza [Reprint Author]; Kormos Eva; Gruz Adrienn; Szabo Rita; Lehel Jozsef; Budai Peter	Novenyvdelem, (OCT 2016) Vol. 52, No. 10, pp. 483-487. ISSN: 0133-0829.	Non-relevant by full text	Formulation tested via injection to chicken embryos. This is not a typical route of exposure. Tested formulation was not the representative formulation for the renewal.			
Glyphosate-based herbicide, but not pure glyphosate, affects peripheral nervous system myelination.	Szepanowski, F. (correspondence); Szepanowski, L.-P.; Mausberg, A.K.; Kleinschnitz, C.; Stettner, M.	European Journal of Neurology, (June 2018) Vol. 25, Supp. Supplement 2, pp. 567. Abstract Number: EPR3161. Meeting Info: 4th Congress of the European Academy of Neurology, EAN 2018. Lisbon, Portugal. 16 Jun 2018-19 Jun 2018 ISSN: 1468-1331	Non-relevant by full text	Effects observed in this study were noted with a glyphosate based herbicide only in vitro. In addition, as this was not the representative formulation the article is not relevant to the renewal.			
Evaluation of genome damage and its relation to oxidative stress induced by glyphosate in human lymphocytes in vitro .	Mladinic Marin; Berend Suzana; Vrdoljak Ana Lucic; Kopjar Nevenka; Radic Bozica; Zeljezic Davor	Environmental and molecular mutagenesis, (2009 Dec) Vol. 50, No. 9, pp. 800-7.	Non-relevant by full text	This study is a non-GLP, non-guideline in vitro study although it meets generally accepted scientific principles. However, due to the occurrence of apoptosis, a clear conclusion on the relevance of the positive response cannot be reached.	Y	Y	
Genotoxicity of glyphosate assessed by the comet assay and cytogenetic tests.	Manas, F.; Peralta, L.; Raviolo, J.; Garcia Ovando, H.; Weyers, A.; Ugnia, L.; Gonzalez Cid, M.; Larripa, I.; Gorla, N.	Environmental Toxicology and Pharmacology (2009) , Volume 28, Number 1, pp. 37-41 ISSN: 1382-6689 DOI: 10.1016/j.etap.2009.02.001 Published by: Elsevier, Amsterdam URL (Availability): http://www.sciencedirect.com/science?_ob equals ArticleURL and _udi equ	Non-relevant by full text	This study applied 3 genotoxicity tests with obvious deviations to current guidelines. The i.p. route of exposure used for the micronucleus assay renders the study irrelevant for human exposure. In the in vitro assays most concentrations used were above 1 mM. Because it is physiologically not possible to attain such concentrations in standard regulatory in vivo testing due to the limited oral bioavailability (approx. 20%), very low dermal absorption, and rapid systemic elimination of glyphosate in in vivo test systems, the results of the in vitro test are not considered relevant for human health risk assessment of glyphosate. Positive in vitro findings were only observed at concentrations above 1 mM.	Y	Y	

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Genotoxicity of the herbicide formulation Roundup (glyphosate) in broad-snouted caiman (Caiman latirostris) evidenced by the Comet assay and the Micronucleus test.	Poletta G L; Larriera A; Kleinsorge E; Mudry M D	Mutation research, (2009 Jan 31) Vol. 672, No. 2, pp. 95-102. Electronic Publication Date: 30 Oct 2008	Non-relevant by full text	Comet assay and Micronucleus (MN) test on erythrocytes obtained from blood of hatched broad-snouted caiman (Caiman latirostris); non-relevant species for risk assessment.	Y	Y	Y
Glyphosate -based herbicides are toxic and endocrine disruptors in human cell lines.	Gasnier Celine; Dumont Coralie; Benachour Nora; Clair Emilie; Chagnon Marie-Christine; Seralini Gilles-Eric	Toxicology, (2009 Aug 21) Vol. 262, No. 3, pp. 184-91. Electronic Publication Date: 17 Jun 2009	Non-relevant by full text	Excessive doses exceed typical in vitro limit doses. In vitro test system is inappropriate with formulation containing surfactants.	Y		
Glyphosate-based herbicide exposure during pregnancy and lactation malprograms the male reproductive morphofunction in F1 offspring.	Teleken Jakeline Liara; Gomes Ellen Carolina Zawoski; Marmontini Carine; Moi Milara Bruna; Balbo Sandra Lucinei; Bonfleur Maria Lucia Ribeiro Rosane Aparecida Amorim Elaine Manoela Porto	Journal of developmental origins of health and disease, (2019 Jul 16) pp. 1-8. Electronic Publication Date: 16 Jul 2019 Journal code: 101517692. E-ISSN: 2040-1752. L-ISSN: 2040-1744.	Non-relevant by full text	This study described a glyphosate based herbicide dosed to mice. As this was not the representative formulation the article is not relevant to the renewal.			
Glyphosate -induced antioxidant imbalance in HaCaT: The protective effect of vitamins C and E.	Gehin, Audrey; Guyon, Catherine; Nicod, Laurence	Environmental Toxicology and Pharmacology, (JUL 2006) Vol. 22, No. 1, pp. 27-34. http://www.journals.elsevier.com/environmental-toxicology-and-pharmacology/#description . ISSN: 1382-6689. E-ISSN: 1872-7077.	Non-relevant by full text	Roundup 3 plus®, induced significant changes in cellular antioxidant status as a glutathione depletion, enzymatic (catalase, glutathione-peroxidase and superoxide dismutase) disorders, and increased lipid peroxidation. Tested product contains 8% (m/m) polyoxyethylene amine (POEA), which is no longer in the composition of the representative formulation.			
Glyphosate Poisoning	Climent, B; Garvi, M; Bocos, J; Rincon, S; Herrera, P; Oroposa, R	Clinical Toxicology [Clin. Toxicol.], Vol. 46, no. 5, p. 419. Jun 2008. ISSN: 1556-3650	Non-relevant by full text	The publication is reporting effects after a 39-year-old male patient who consumed intentionally more than 200 ml of glyphosate. This is not relevant for glyphosate dossier and risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate formulations induce apoptosis and necrosis in human umbilical, embryonic, and placental cells.	Benachour Nora; Seralini Gilles-Eric	Chemical research in toxicology, (2009 Jan) Vol. 22, No. 1, pp. 97-105.	Non-relevant by full text	Excessive doses exceed typical in vitro limit doses. In vitro test system is inappropriate with surfactants	Y		
Glyphosate induces transient male sterility in <i>Ipomoea purpurea</i>	Baucom, R S; Mauricio, R; Chang, S M	Botany (2008) , Volume 86, Number 6, pp. 587-594, Electronic ISSN: 1916-2804 Source Note: 2008 June, v. 86, no. 6	Non-relevant by full text	The article relates to reproduction and fertility in male <i>Ipomoea purpurea</i> (flower - morning-glory). The test item was not identified in the M&M section (although it seems that they used a Roundup formulation probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan). In addition, the study design and test system are not really relevant for the European regulatory purposes (flowering is not a parameter to be used in the RA). Furthermore, an important part of the test was conducted under US field conditions and therefore, not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.).			
The Glyphosate-Based Herbicide Roundup Does not Elevate Genome-Wide Mutagenesis of <i>Escherichia coli</i> .	Tincher Clayton; Long Hongan; Behringer Megan; Walker Noah; Lynch Michael	G3 (Bethesda, Md.), (2017 Oct 05) Vol. 7, No. 10, pp. 3331-3335. Electronic Publication Date: 5 Oct 2017 Journal code: 101566598. E-ISSN: 2160-1836. L-ISSN: 2160-1836. Report No.: PMC-PMC5633383.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate as a glyphosate based formulation was used instead of glyphosate for in vitro testing.			
Serum biochemical assessment of hepatic and renal functions of rats during oral exposure to glyphosate with zinc.	Tizhe Emmanuel Vandi; Ibrahim Najume Dogon-Giginya; Fatiha Mohammed Yakasai; Igboke Ikechukwu Onyebuchi; George Butcher-Danladi Jonathan Ambali Suleiman Folorunsho Shallangwa Joshua Mallum	Comparative clinical pathology, (2014) Vol. 23, pp. 1043-1050. Electronic Publication Date: 3 May 2013 Journal code: 101134362. ISSN: 1618-5641. L-ISSN: 1618-5641. Report No.: PMC-PMC4085474.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate because a combination of zinc chloride and a glyphosate formulation (Bushfire) has been used instead of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pancreatic function and histoarchitecture in Wistar rats following chronic exposure to Bushfire®: the mitigating role of zinc.	Tizhe Emmanuel Ibrahim Najume; Fatihu Mohammed Ambali Suleiman Igbokwe Ikechukwu Tizhe Ussa	The Journal of international medical research, (2018 Aug) Vol. 46, No. 8, pp. 3296-3305. Electronic Publication Date: 1 Jul 2018 Journal code: 0346411. E-ISSN: 1473-2300. L-ISSN: 0300-0605. Report No.: PMC-PMC6134669.	Non-relevant by full text	The formulation tested (BushfireVR, containing 441 g/L potassium salt; 360 g a.e./L) is not the representative formulation the article is not relevant to the renewal.			
Effect of zinc on erythrocyte osmotic fragility and hemogram following chronic exposure to glyphosate-based herbicide in Wistar rats	Tizhe, Emmanuel Vandi; Ibrahim, Najume Dogon-Giginya; Fatihu, Mohammed Yakasai; Ambali, Suleiman Folorunsho; Igbokwe, Ikechukwu Onyebuchi; Tizhe, Delia Ussa	Comparative Clinical Pathology, (2019) pp. Ahead of Print. CODEN: CCPOAJ. ISSN: 1618-5641.	Non-relevant by full text	Formulation tested (BUSHFIRE, Ningbo Agro-star Industrial Co., Ltd., Zhejiang, China; 441 g/L potassium salt, 360 g/L a.e.). As this was not the representative formulation the article is not relevant to the renewal.			
Herbicides, glyphosate resistance and acute mammalian toxicity : simulating an environmental effect of glyphosate - resistant weeds in the USA.	Gardner Justin G; Nelson Gerald C	Pest management science, (2008 Apr) Vol. 64, No. 4, pp. 470-8.	Non-relevant by full text	Usage field-level data to assess glyphosate-resistant (GR) technology with a mammalian toxicity environmental indicator. Use is made of Agricultural Resource Management Survey (ARMS) data collected by the United States Department of Agriculture (USDA) to calculate actual farm-level LD50 doses, and a treatment effect regression model is employed to test the hypotheses. The article is dealing with model prediction which is not a toxicological endpoint and then not relevant for risk assessment.			
Hormetic Neurobehavioral effects of low dose toxic chemical mixtures in real-life risk simulation (RLRS) in rats	Tsatsakis, Aristidis M.; Docea, Anca Oana; Calina, Daniela; Buga, Ana Maria; Zlatian, Ovidiu; Gutnikov, Sergei; Kostoff, Ronald N.; Aschner, Michael	Food and Chemical Toxicology (2019), 125, 141-149 CODEN: FCTOD7; ISSN: 0278-6915	Non-relevant by full text	The test material was a mixture of thirteen different chemicals and cannot be interpreted for glyphosate alone.			
Prenatal and neonatal exposure to glyphosate-based herbicide reduces the primordial to primary follicle transition in the newborn rat ovary: a preliminary study	Tuerkmen, R.; Tuerkmen, T.	Kocatepe Veterinary Journal (2019), Volume 12, Number 2, pp. 168-177, many ref. ISSN: 1308-1594 Published by: Afyon Kocatepe University Faculty of Veterinary Medicine, Afyonkarahisar URL (Availability): https://dergipark.org.tr/en/download/article-file/7	Non-relevant by full text	Rats gavaged with a glyphosate based herbicide [Knockdown 48 SL; Safa Agriculture Inc., Turkey] As this was not the representative formulation the article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Protective effects of resveratrol on biomarkers of oxidative stress, biochemical and histopathological changes induced by sub-chronic oral glyphosate-based herbicide in rats.	Turkmen Ruhii; Birdane Yavuz Osman; Ince Sinan Demirel Hasan Huseyin Kabu Mustafa	Toxicology research, (2019 Mar 01) Vol. 8, No. 2, pp. 238-245. Electronic Publication Date: 7 Jan 2019 Journal code: 101587950. ISSN: 2045-452X. L-ISSN: 2045-452X. Report No.: PMC-PMC6417488.	Non-relevant by full text	This paper describes high oral gavage dosing of a glyphosate based herbicide. As this is not the representative formulation the article is not relevant to the renewal.			
Antioxidant and cytoprotective effects of N-acetylcysteine against subchronic oral glyphosate-based herbicide-induced oxidative stress in rats.	Turkmen Ruhii; Birdane Yavuz Osman; Yavuz Hidayet; Ince Sinan Demirel Hasan Huseyin Kabu Mustafa	Environmental science and pollution research international, (2019 Apr) Vol. 26, No. 11, pp. 11427-11437. Electronic Publication Date: 25 Feb 2019 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	The formulation tested in this article (Knockdown 48SL, Safa Agriculture Corp., Turkey; containing 480 g/L isopropylamine salt) is not the representative formulation and is not relevant to the renewal.			
In vitro and in vivo evaluation of the genotoxicity of the herbicide glyphosate in mice .	Amer, Soheir M.; Aly, Fawzia A. E.; Farghaly, Ayman A.; Ibrahim, Aziza A. E.	Bulletin of the National Research Centre (Cairo), (2006) Vol. 31, No. 5, pp. 427-446. ISSN: 1110-0591.	Non-relevant by full text	Information on concentrations is questionable for in vitro part, as M glyphosate/mL medium is no scientific unit for a concentration. It should be noted, that an ip. injection is not a relevant route of administration and thus considered not relevant to human risk assessment.		Y	
Inferring past pesticide exposures: A matrix of individual active ingredients in home and garden pesticides used in past decades.	Colt, Joanne S. (Correspondence); Zahm, Shelia H.; Tobias, Geoffrey S.; Hartge, Patricia	Environmental Health Perspectives, (Feb 2007) Vol. 115, No. 2, pp. 248-254. Refs: 35 ISSN: 0091-6765; E-ISSN: 1552-9924	Non-relevant by full text	Describes the development of an exposure classification tool to classify pesticide exposure status. Article does not report pesticide exposure status or health outcomes for any study population.			
Biomarker responses (serum biochemistry) in pregnant female wistar rats and histopathology of their neonates exposed prenatally to pesticides	Upadhyay, Jyoti; Rana, Mahendra [Reprint Author]; Bisht, Satpal Singh; Rana, Amita; Durgapal, Sumit; Juyal, Vijay	Brazilian Journal of Pharmaceutical Sciences, (2019) Vol. 55. http://www.bcq.usp.br/revista_brasileira_de_ciencias.htm . ISSN: 1984-8250. E-ISSN: 2175-9790.	Non-relevant by full text	In this report a glyphosate based herbicide was tested (Topper 77; Crystal Crop Protection Pvt. Ltd. India) at one dose to six rats and compared with controls. As this was not the representative formulation the article is not relevant to the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Is it time to reassess current safety standards for glyphosate-based herbicides?	Vandenberg Laura N Blumberg Bruce Antoniou Michael N; Mesnage Robin Benbrook Charles M Benbrook Charles M Carroll Lynn; Colborn Theo Everett Lorne G Hansen Michael Landrigan Phillip J Lanphear Bruce P Vom Saal Frederick S Welshons Wade V Myers John Peterso	Journal of epidemiology and community health, (2017 Jun) Vol. 71, No. 6, pp. 613-618. Electronic Publication Date: 20 Mar 2017 Journal code: 7909766. E-ISSN: 1470-2738. L-ISSN: 0143-005X. Report No.: PMC-PMC5484035.	Non-relevant by full text	This publication is considered not relevant because it is not based on experimental work.			
Effects of a glyphosate-based herbicide on the uterus of adult ovariectomized rats.	Varayoud Jorgelina; Durando Milena; Ramos Jorge G; Milesi Maria M; Ingaramo Paola I; Munoz-de-Toro Monica; Luque Enrique H	Environmental toxicology, (2017 Apr) Vol. 32, No. 4, pp. 1191-1201. Electronic Publication Date: 27 Jul 2016 Journal code: 100885357. E-ISSN: 1522-7278. L-ISSN: 1520-4081.	Non-relevant by full text	This publication is considered not relevant for the risk assessment of glyphosate as a non-representative glyphosate formulation was tested instead of glyphosate.			
Morbidity of Agricultural Chemical Use in Guyana	Aleguas, A; Spiller, Ha	Clinical Toxicology [Clin. Toxicol.]. Vol. 45, no. 4, p. 361. May 2007. ISSN: 1556-3650	Non-relevant by full text	Only an abstract available without details			
Pesticide exposure assessed through agricultural crop proximity and risk of amyotrophic lateral sclerosis.	Vinceti, Marco (correspondence); Filippini, Tommaso; Violi, Federica; Malagoli, Carlotta; Iacuzio, Laura; Arcolin, Elisa Vinceti, Marco (correspondence); Rothman, Kenneth J.; Wise, Lauren A. Rothman, Kenneth J. Costanzini, Sofia; Teggi, Sergio; Ghermandi,	Environmental Health: A Global Access Science Source, (29 Aug 2017) Vol. 16, No. 1. arn. 91. Refs: 85 E-ISSN: 1476-069X	Non-relevant by full text	This article does not demonstrate correlations with glyphosate use and effect and is therefore not relevant.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: Population based case-control study	Von Ehrenstein, Ondine S.; Ling, Chenxiao; Cui, Xin; Park, Andrew S.; Ritz, Beate; Cockburn, Myles; Yu, Fei; Wu, Jun	BMJ (Online) (2019) Volume 364, am: 1962, 80 refs. CODEN: BMJOAE ISSN: 0959-8146 E-ISSN: 1756-1833 DOI: 10.1136/bmj.1962 Published by: BMJ Publishing Group,	Non-relevant by full text	This publication is not relevant for the risk assessment of glyphosate with relation to ED because the pathology investigated is not ED related (autism spectrum disorder in children).			
Neurotoxicological effects of the herbicide glyphosate	Anadon, A; Del Pino, J; Martinez, Ma; Caballero, V; Ares, I; Nieto, I; Martinez-Larranaga, Mr	Toxicology Letters [Toxicol. Lett.]. Vol. 180, S164 p. 5 Oct 2008. ISSN: 0378-4274 DOI: 10.1016/j.toxlet.2008.06.255 Published by: Elsevier Science, Elsevier House, Brookvale Plaza East Park Shannon, Co. Clare Ireland, [mailto:nlinfo-f@elsevier.nl], [URL:http://www.elsevier.nl/]	Non-relevant by full text	No full text available (congress abstract only)			
Occupational exposure of farm workers to pesticides: Biochemical parameters and evaluation of genotoxicity.	Remor, Aline Pertile; Totti, Carla Caprini; Moreira, Dariele Alves; Dutra, Gustavo Pimentel; Heuser, Vanina Dahlstrom; Boeira, Jane Marlei.	Environ. Int., Volume 35, Issue 2, Page 273-278, Publication Year 2009	Non-relevant by full text	Evaluation of the activities of butyrylcholinesterase (BChE) and -aminolevulinic acid dehydratase (ALA-D) enzymes, hemato., lipid parameters and genotoxicity using Comet assay in peripheral blood leukocytes and a micronucleus (MN) test in oral mucosa cells of agricultural workers. 37 male pesticides applicators (sprayers) exposed since childhood to a mixture of pesticides. No defined information on exposure or substances were given.			
Editor in Chief of Food and Chemical Toxicology answers questions on retraction	Wallace Hayes A	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2014 Mar) Vol. 65, pp. 394-5. Electronic Publication Date: 6 Jan 2014 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278-69	Non-relevant by full text	Letter from editor on Seralini retraction (2012) -> #2472, 3617, 5654 (all not relevant)			
Advance on clinical study of glyphosate toxicity.	Wang Fang; Yang GuangXue; Wang, F.; Yang, G. X.	Journal of Environmental & Occupational Medicine (2018), Volume 35, Number 2, pp. 175-179, 43 refs. ISSN: 2095-9982 Published by: Shanghai Municipal Center for Disease Control and Prevention, Shanghai	Non-relevant by full text	A review and summary of selected literature.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Oxidative stress responses of rats exposed to Roundup and its active ingredient glyphosate.	El-Shenawy, Nahla S.	Environmental Toxicology and Pharmacology, (NOV 2009) Vol. 28, No. 3, pp. 379-385. http://www.journals.elsevier.com/environmental-toxicology-and-pharmacology/#description . ISSN: 1382-6689. E-ISSN: 1872-7077.	Non-relevant by full text	The publication is reporting information on oxidative stress responses to rats exposed to Roundup and its active ingredient glyphosate; however using intraperitoneal route of exposure which is not relevant for risk assessment.			
PON1Q192R genetic polymorphism modifies organophosphorus pesticide effects on semen quality and DNA integrity in agricultural workers from southern Mexico	Perez-Herrera, N.; Polanco-Minaya, H.; Salazar-Arredondo, E.; Solis-Heredia, M. J.; Hernandez-Ochoa, I.; Rojas-Garcia, E.; Alvarado-Mejia, J.; Borja-Aburto, V. H.; Quintanilla-Vega, B.	Toxicology and Applied Pharmacology, (2008) Vol. 230, No. 2, pp. 261-268. CODEN: TXAPA9. ISSN: 0041-008X.	Non-relevant by full text	Semen quality of agricultural workers with general high exposure to pesticides (29 different substances), mainly focused on orhanophosphors, was investigated. No definded information on exposure or substances were given.			
Parental occupational exposure to pesticides and the risk of childhood leukemia in Costa Rica.	Monge, Patricia [Reprint Author]; Wesseling, Catharina; Guardado, Jorge; Lundberg, Ingvar; Ahlbom, Anders; Cantor, Kenneth P.; Weideroass, Elisabete; Partanen, Tmo	Scandinavian Journal of Work Environment and Health, (AUG 2007) Vol. 33, No. 4, pp. 293-303.	Non-relevant by full text	Publication describes general pesticide, exposures, general herbicide exposures, or collective exposures of "paraquat, chlorothalonil, glyphosate, and others."	Y		
Assessment of DNA damage in floriculturists in southern Brazil	Wilhelm, Camila Morschbacher; Calsing, Adriani Kunz; Basso da Silva, Luciano	Environmental Science and Pollution Research, (2015) Vol. 22, No. 11, pp. 8182-8189. CODEN: ESPLC. ISSN: 0944-1344.	Non-relevant by full text	No glyphosate specific conclusions, confounded due to multiple pesticide uses.			
Chronic Kidney Disease in Agricultural Communities	Wilke, Russell A. (Reprint) Wilke, Russell A. (Reprint) Qamar, Mohammad Lupu, Roxana A. Gu, Shaopeng Zhao, Jing	AMERICAN JOURNAL OF MEDICINE, (OCT 2019) Vol. 132, No. 10, pp. E727-E732. ISSN: 0002-9343.	Non-relevant by full text	Discussion of different factors that could be used to predict prevalence of chronic kidney disease in the US.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticide-associated pemphigus vulgaris.	Fisher Kristopher R; Higginbotham Raymond; Frey Jamie; Granese Jacqueline; Pillow Jessica; Skinner Robert B	Cutis, (2008 Jul) Vol. 82, No. 1, pp. 51-4.	Non-relevant by full text	Case report 40 year old men with pemphigus vulgaris, developed within days of a one-time heavy exposure to fumes of burning glyphosate. No defined information on exposure and the exposed substance (batch, manufacturer, analytics, adjuvants) were given.			
Pesticides and prostate cancer : A review of epidemiologic studies with specific agricultural exposure information.	Mink, Pamela J., Dr.; Adami, Hans-Olov; Trichopoulos, Dimitrios; Britton, Nicole L.; Mandel, Jack S.	European Journal of Cancer Prevention, (April 2008) Vol. 17, No. 2, pp. 97-110. Refs: 60 ISSN: 0959-8278 CODEN: EJUPEK	Non-relevant by full text	Publication is a Secondary information (e.g. scientific or regulatory reviews) and as such not relevant for the risk assessments. Data of primary research articles matching search terms of the Glyphosate search are evaluated elsewhere in the Literature review.			
Protecting children from known pesticides exposures: our collective duty to provide primary prevention.	Witherspoon, Nsedu Obot [Reprint Author]	Pediatric Research, (JAN 2019) Vol. 85, No. 2, pp. 118-119. http://www.nature.com/pr/index.html . CODEN: PEREBL. ISSN: 0031-3998. E-ISSN: 1530-0447.	Non-relevant by full text	Study does not include data on glyphosate and is therefore not relevant.			
The Pesticide Exposure of People Living in Agricultural Community, Northern Thailand.	Wongta Anurak; Sawarn Nootchakarn; Tongchai Phannika; Sutan Kunrunya; Kerdnoi Tanyaporn; Prapamontol Tippawan; Hongsibsong Surat Wongta Anurak; Hongsibsong Surat Sawarn Nootchakarn; Tongchai Phannika; Hongsibsong Surat	Journal of toxicology, (2018) Vol. 2018, pp. 4168034. Electronic Publication Date: 29 Nov 2018 Journal code: 101519097. ISSN: 1687-8191. L-ISSN: 1687-8191. Report No.: PMC-PMC6304500.	Non-relevant by full text	Farming practices in Thailand are not applicable to European farmer exposure scenarios.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pre-and postnatal toxicity of the commercial glyphosate formulation in Wistar rats .	Dallegre Eliane; Mantese Fabiana D; Oliveira Rosemari T; Andrade Anderson J M; Dalsenter Paulo R; Langeloh Augusto	Archives of toxicology, (2007 Sep) Vol. 81, No. 9, pp. 665-73. Electronic Publication Date: 19 Jul 2007	Non-relevant by full text	Non-relevant formulation tested			Y
The mechanism of DNA damage induced by Roundup 360 PLUS, glyphosate and AMPA in human peripheral blood mononuclear cells - genotoxic risk assesment.	Wozniak Ewelina Sicinska Paulina; Michalowicz Jaromir; Bukowska Bozena Wozniak Katarzyna Reszka Edyta Huras Bogumila; Zakrzewski Jerzy	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2018 Oct) Vol. 120, pp. 510-522. Electronic Publication Date: 25 Jul 2018 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 027	Non-relevant by full text	In vitro effects only noted at excessively high doses greater than 100-250 uM. Therefore this article is not relevant to the risk assessment.			
Research: Pesticide Exposure Extends to Applicators Family	Ogg, C	Crop watch (2008) , Number 8 Source Note: 2008 Apr. 25, no. 8	Non-relevant by full text	Non peer-reviewed web publication of University of Nebraska.			
Pesticides use and exposure among yam farmers in the Nanumba traditional area of Ghana.	Wumbei Abukari; Houbraken Michael; Spanoghe Pieter Wumbei Abukari	Environmental monitoring and assessment, (2019 Apr 25) Vol. 191, No. 5, pp. 307. Electronic Publication Date: 25 Apr 2019 Journal code: 8508350. E-ISSN: 1573-2959. L-ISSN: 0167-6369.	Non-relevant by full text	Article is not relevant to agricultural practices and glyphosate uses in Europe.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Responsiveness of the interrenal tissue of Jundia (Rhamdia quelen) to an in vivo ACTH test following acute exposure to sublethal concentrations of agrochemicals	Cericato, Leonardo; Neto, Joaquim Goncalves Machado; Kreutz, Luiz Carlos; Quevedo, Rosmari Mezzalira; Da Rosa, Joao Gabriel Santos; Koakoski, Gessi; Centenaro, Lucas; Pottker, Emanuele; Marqueze, Alessandra; Barcellos, Leonardo Jose Gil	Comparative Biochemistry and Physiology, Part C: Toxicology and Pharmacology (2009), 149C(3), 363-367	Non-relevant by full text	Jundiá (Rhamdia quelen) [catfish]; not relevant species.			
Skin decontamination of glyphosate from human skin in vitro .	Zhai H; Chan H P; Hui X; Maibach H I	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2008 Jun) Vol. 46, No. 6, pp. 2258-60. Electronic Publication Date: 7 Mar 2008	Non-relevant by full text	The article is comparing three model decontaminant solutions for their ability to remove a glyphosate (only used as model herbicide) from an in vitro model. Glyphosate is only used as a control substance (not tested with different doses).			
The protective effect of orange juice on glyphosate toxicity in adult male mice.	Youness, E. R.; Agha, F. E.; El-Toukhy, S. E.; El-Naggar, S. M. M.; Selim, A. A. I.; Ibrahim, A. M. M.	Journal of Chemical and Pharmaceutical Research (2016), Volume 8, Number 3, pp. 13-28, 98 refs. ISSN: 0975-7384 Published by: Journal of Chemical and Pharmaceutical Research, Jaipur URL (Availability): http://jocpr.com/vol8-iss3-2016/JCPR-2016-8-3-13-28 .	Non-relevant by full text	This study uses excessively high gavage doses to rats and is not relevant to renewal.			
The antagonistic effects of tea polyphenols on damage of mouse Sertoli cells induced by glyphosate.	Yu Hui; Zhao WenHong; Zhou LiHua; Liu ChunFang; Jiang ChengMei; Yu, H.; Zhao, W. H.; Zhou, L. H.; Liu, C. F.; Jiang, C. M.	Acta Nutrimenta Sinica (2013), Volume 35, Number 3, pp. 283-287, 13 refs. ISSN: 0512-7955 Published by: Acta Nutrimenta Sinica, c/o Institute of Hygiene and Environmental Medicine, Tianjin	Non-relevant by full text	In vitro study testing of what appears to be a formulated product, described as, glyphosate (41% Isopropylamine Hydrochloride, Monsanto glyphosate (41% Isopropylamine Hydrochloride, Monsanto), dosed at 10-160 ug/mL (high glyphosate levels of 24-390 uM plus surfactant), well above any potential physiological concentrations in sertoli cells.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Circular RNA expression profiles in hippocampus from mice with perinatal glyphosate exposure.	Yu Ning; Tong Yun Zhang Danni; Zhao Shanshan; Fan Xinli Wu Lihui Ji Hua	Biochemical and biophysical research communications, (20180702) Vol. 501, No. 4, pp. 838-845. Electronic Publication Date: 19 May 2018 Journal code: 0372516. E-ISSN: 1090-2104. L-ISSN: 0006-291X.	Non-relevant by full text	This publication is considered not relevant for risk assessment of glyphosate with relation to ED because a no ED related endpoint was investigated (circular RNA expression profiles in the hippocampus).			
Glyphosate-based herbicide induces hyperplastic ducts in the mammary gland of aging Wistar rats.	Zanardi Maria V; Schimpf Marlise Guerrero; Milesi Maria M; Varayoud Jorgelina Gastiazoro Maria P Munoz-de-Toro Monica Durando Milena	Molecular and cellular endocrinology, (2019 Nov 19) Vol. 501, pp. 110658. Electronic Publication Date: 19 Nov 2019 Journal code: 7500844. E-ISSN: 1872-8057. L-ISSN: 0303-7207.	Non-relevant by full text	This study examines the effects of glyphosate based herbicide dosed to rats. As this is not the representative formulation the article is not relevant to the renewal.			
Synthesis, cytotoxicity and clastogenicity of novel alpha-aminophosphonic acids.	Naydenova E; Troev K; Topashka-Ancheva M; Hagele G; Ivanov I; Kril A	Amino acids, (2007 Nov) Vol. 33, No. 4, pp. 695-702. Electronic Publication Date: 15 Nov 2006	Non-relevant by full text	This study is a non-GLP, non-guideline conforming in vivo study. The cytotoxicity, clastogenic and antiproliferative effect of different substances are testes. No informations on test items (batch, expiration date, storage, manufacturer) are given. Characterization of newly synthesized derivatives, where glyphosate was used as reference substance for cytotoxicity.		Y	
The early prognostic factors of glyphosate - surfactant intoxication.	Lee Ching-Hsing; Shih Chia-Pang; Hsu Kuang-Hung; Hung Dong-Zong; Lin Chih-Chuan	The American journal of emergency medicine, (2008 Mar) Vol. 26, No. 3, pp. 275-81.	Non-relevant by full text	Case study on intoxicated patients (58 patients (19 men and 39 women; age, 48.8 ± 15.8 years)) of Chang Gung Memorial Hospital, Taiwan from April 1996 to March 2003 and Taichung Veterans General Hospital, Taiwan from April 2000 to October 2003. No information on substance, administered dose and incidence of intoxication for the patients are given. The intake of the substance was only confirmed via physical examination and statements of patients/witnesses (no analytical analysis was performed).			
The effect of sub-acute and sub-chronic exposure of rats to the glyphosate -based herbicide Roundup.	Caglar, Sinan; Kolankaya, Duerdane	Environmental Toxicology and Pharmacology, (JAN 2008) Vol. 25, No. 1, pp. 57-62. ISSN: 1382-6689.	Non-relevant by full text	The aim of the study was biochemical and histopathological examination of the toxic effects of glyphosate-based herbicide Roundup in rat liver. However the tested Roundup contains POEA which is no longer in the composition of the representative formulation.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Molecular cloning, characterization, expression and enzyme activity of catalase from planarian <i>Dugesia japonica</i> in response to environmental pollutants.	Zhang He-Cai; Ma Ke-Xue; Yang Yu-Juan; Shi Chang-Ying Chen Guang-Wen Liu De-Zeng	Ecotoxicology and environmental safety, (2018 Dec 15) Vol. 165, pp. 88-95. Electronic Publication Date: 4 Sep 2018 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Novel microbial test system of questionable relevance to human health risk assessment.			Y
Time- and dose-dependent effects of roundup on human embryonic and placental cells.	Benachour N; Sipahutar H; Moslemi S; Gasnier C; Travert C; Seralini G E	Archives of environmental contamination and toxicology, (2007 Jul) Vol. 53, No. 1, pp. 126-33. Electronic Publication Date: 4 May 2007	Non-relevant by full text	Excessive doses exceed typical in vitro limit doses. In vitro test system is inappropriate for formulations containing surfactants.	Y		
Effects of glyphosate on apoptosis and expressions of androgen-binding protein and vimentin mRNA in mouse Sertoli cells	Zhao Wenhong Yu Hui; Zhang Jianguo; Shu Li	Nan fang yi ke da xue xue bao = Journal of Southern Medical University, (2013 Nov) Vol. 33, No. 11, pp. 1709-13. Journal code: 101266132. ISSN: 1673-4254. L-ISSN: 1673-4254.	Non-relevant by full text	Not relevant. In vitro testing of a GBH.			
Toxicity and Genotoxicity Testing of Roundup	Raipulis, Jekabs; Malda Toma; Maija Balode	Proceedings of the Latvian Academy of Sciences (2009) , Volume 63, Number 1-2, pp. 29-32 ISSN: 1407-009X Published by: Versita Source Note: 2009 July 8, v. 63, no. 1-2	Non-relevant by full text	The tested Roundup BIO formulation (Monsanto, Brussels, Belgium) contains polyoxyethylene amine (POEA), which is no longer in the composition of the representative formulation.		Y	
THE PROTECTIVE EFFECTS OF TEA POLYSACCHARIDES ON INJURY AND APOPTOSIS OF MOUSE SERTOLI CELLS INDUCED BY GLYPHOSATE.	Zhao, Wen-Hong [Reprint Author]; Zhai, Hu; Wang, Li; Shu, Li; Zhou, Li-Hua	Current Topics in Nutraceutical Research, (FEB 2016) Vol. 14, No. 1, pp. 81-90. ISSN: 1540-7535.	Non-relevant by full text	Not relevant. In vitro testing of a glyphosate based herbicide.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
An Effective Machine Learning Approach for Identifying the Glyphosate Poisoning Status in Rats Using Blood Routine Test	Zhu, Jiayin Zhu, Jiayin Zhao, Xuehua Li, Huaizhong Chen, Huiling (Reprint); Wu, Gang (Reprint)	IEEE ACCESS, (2018) Vol. 6, pp. 15653-15662. ISSN: 2169-3536.	Non-relevant by full text	Test substance source not identified, not clear whether glyphosate or formulation administered to animals. Data used in development of machine learning.			
Causal mechanism and component causes in Mesoamerican-Sri Lankan nephropathy: the moderator's view	Zoccali, Carmine (Reprint)	NEPHROLOGY DIALYSIS TRANSPLANTATION, (APR 2017) Vol. 32, No. 4, pp. 607-610. ISSN: 0931-0509.	Non-relevant by full text	No glyphosate specific information provided.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Commercial and Industrial Chemical Hazards for Ruminants: An Update.	Poppenga, Robert H., DVM, PhD (correspondence) Hooser, Stephen B.	Veterinary Clinics of North America - Food Animal Practice, (November 2020) Vol. 36, No. 3, pp. 621-639. Refs: 57 ISSN: 0749-0720 CODEN: VCAPEO	Non-relevant by full text	Article only provides general information on the use of glyphosate and potential exposure of livestock to glyphosate residues. No monitoring data or any experimental data provided.			
Estimated dietary pesticide exposure from plant-based foods using NMF-derived profiles in a large sample of French adults	Rebouillat, Pauline; Vidal, Rodolphe; Cravedi, Jean-Pierre; Taupier-Letage, Bruno; Debrauwer, Laurent; Gamet-Payraastre, Laurence; Touvier, Mathilde; Hercberg, Serge; Lairon, Denis; Baudry, Julia; Kesse-Guyot, Emmanuelle	European Journal of Nutrition (2020) Ahead of Print CODEN: EJNUFZ; ISSN: 1436-6207	Non-relevant by full text	Publication is dealing with general pesticide exposures (not glyphosate specific). Purpose of the study was to identify dietary pesticide exposure profiles from conventional and organic food. No information on direct exposure to glyphosate and no reporting of effects.			
Conformity of rape, peas and maize flowers, concerning pesticide residues for organic beekeeping.	Cebotari, V.; Buzu, I.	Scientific Papers, Series D. Animal Science (2020), Volume 63, Number 1, pp. 415-421, 21 refs. ISSN: 2285-5750 Published by: University of Agronomic Sciences and Veterinary Medicine of Bucharest, Bucharest URL (Availability): http://animalsciencejournal.usamv.ro/pdf/2020/issue_1/vol2020_1.pdf	Non-relevant by full text	Monitoring of flowers of rape, pea and maize flowers for residues of glyphosate in Moldova (1 sampling site per crop, 5 replicate samples per crop). Glyphosate was detected in all samples. No description of the analytical procedure and no analytical validation data. In addition, the publication cannot be used to derive an endpoint. Furthermore, since the dataset is far too small to be considered representative of a country or region and since the agricultural practice at the sampling sites is not reported, the data are not usable or supportive for regulatory evaluations.			
Residues levels of pesticides in walnuts of Iran and associated health risks.	Taghizadeh, Seyedeh Faezeh; Badibostan, Hasan; Hayes, A. Wallace; Giesy, John P.; Karimi, Gholamreza [Reprint Author]	Human and Ecological Risk Assessment, (JAN 2 2021) Vol. 27, No. 1. http://www.tandfonline.com/loi/bher20 . ISSN: 1080-7039. E-ISSN: 1549-7860.	Non-relevant by full text	Monitoring data from Iran on pesticides in walnuts (sampling from 5 sites). Glyphosate was detected in samples from 4 sites (no information provided on sample size, residue range in mg/kg). The study is not reliable and thus not relevant: It is unclear what was analysed: "Green husk and hard shells of walnuts were separated and then homogenized". Analytical method used was GC/MS. Extraction with acetonitrile. No information on how glyphosate is used in nut orchards. Sample size and residue levels not provided in tabular form. Unclear statistics which cannot be reproduced.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Quantitation of pesticide residue in water and food in Louisiana, USA	Adeniyi, Olubode; Hernandez, Amy; Le Blanc, Mark; King, Joan; Janes, Marlene	Journal of Water Resource and Protection, (2016) Vol. 8, No. 12, pp. 1145-1157. CODEN: JWRPAB. ISSN: 1945-3108.	Non-relevant by full text	Not relevant. Glyphosate not included in analysis.			
Evaluation de la contamination des tubercules de manioc (Manihot esculenta Crantz) par les pesticides dans la zone cotonniere de Djidja (Benin) [Evaluation of contamination of cassava tubers (Manihot esculenta Crantz) by pesticides in cotton area of Djid	Aikpo, H Firmin; Agbandji, Lucien; Chabi, B Christophe; Koumolou, Luc; Houssou, S Christophe; Edoth, A Patrick	International Journal of Innovation and Applied Studies. Vol. 14, no. 3, 744 p. Feb 2016., 24 refs. ISSN: 2028-9324 Published by: International Journal of Innovation and Applied Studies	Non-relevant by full text	Based on the abstract the publication is likely to provide information on the uptake of glyphosate residues by root crops. However, since there is no information on the amount of glyphosate applied (if any), it is not possible to draw any conclusion from the results presented.			
Dissipation kinetics of glyphosate in tea and tea-field under northwestern mid-hill conditions of India	Bandana, Bandana; Sharma, Neelam; Joshi, Robin; Gulati, Ashu; Sondhia, Shobha	Journal of Pesticide Science [J. Pestic. Sci.]. Vol. 40, no. 3, 82 p. 2015. ISSN: 1348-589X E-ISSN: 1349-0923 Published by: Japan Science and Technology Agency, Tokyo	Non-relevant by full text	Concerns a crop that is not a representative crop for renewal.			
Fate of Glyphosate during Production and Processing of Glyphosate-Resistant Sugar Beet (Beta vulgaris).	Barker Abigail L; Dayan Franck E	Journal of agricultural and food chemistry, (2019 Feb 20) Vol. 67, No. 7, pp. 2061-2065. Electronic Publication Date: 11 Feb 2019 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Non-relevant by full text	Provides information on processing of glyphosate in glyphosate tolerant sugar beet. Not a relevant use for renewal.			
Pesticide consumption at farm level and residues in the environment and in milk	Bertrand, S.	Bulletin of the International Dairy Federation (2010), 443, 33-38 CODEN: BIDFDY; ISSN: 0250-5118	Non-relevant by full text	Article focuses on intake of pesticides by farm animals in general. Glyphosate is only mentioned in one table (list of log POW) and the examples given and described in the article deal with other active substances.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Foraging in maize field areas: A risky business?.	Boily, Monique [Reprint Author]; Aras, Philippe; Jumarie, Catherine	Science of the Total Environment, (DEC 1 2017) Vol. 601, pp. 1522-1532. http://www.journals.elsevier.com/science-of-the-total-environment/#description . CODEN: STENDL. ISSN: 0048-9697. E-ISSN: 1879-1026.	Non-relevant by full text	Study compared conventionally and organically grown crops. Results could not be attributed to glyphosate, other products used on conventional plot.			
Rapid and reliable detection of glyphosate in pome fruits, berries, pulses and cereals by flow injection - Mass spectrometry.	Ciasca Biancamaria; Pascale Michelangelo Pecorelli Ivan; Paoloni Angela Lepore Lavinia; Catucci Lucia Lattanzio Veronica Maria Teresa	Food chemistry, (2020 Apr 25) Vol. 310, pp. 125813. Electronic Publication Date: 6 Nov 2019 Journal code: 7702639. E-ISSN: 1873-7072. L-ISSN: 0308-8146.	Non-relevant by full text	Residue analytical method. Wheat and chickpea not relevant to the uses considered for renewal in the EU. Only few real samples analysed. Therefore, not "representative" in terms of monitoring.			
Wheat preharvest herbicide application, whole-grain flour properties, yeast activity and the degradation of glyphosate in bread	Gelinas, Pierre; Carole McKinnon; Fleur Gagnon	International journal of food science & technology (2018), Volume 53, Number 7, pp. 1597-1602 ISSN: 0950-5423 Published by: John Wiley & Sons, Ltd Source Note: 2018 July, v. 53, no. 7	Non-relevant by full text	Provides information on effects of glyphosate on flour properties in baking following preharvest application in wheat. Not a relevant use for renewal.			
Monitoring and risk assessment due to presence of heavy metals and pesticides in tea samples.	Ghazala Yaqub; Fizza Ilyas; Muniba Idrees; Vania Mariyam	Food Science and Technology (Campinas) (2018), Volume 38, Number 4, pp. 625-628, 13 refs. ISSN: 0101-2061 DOI: 10.1590/fst.07417 Published by: Sociedade Brasileira de Ciencia e Tecnologia de Alimentos, Campinas URL (Availability): http://www.scielo.br/sci	Non-relevant by full text	Reports on glyphosate detection in tea samples from Pakistan, but with no information on the analytical method used or way to evaluate results. Not relevant to EU risk assessment.			
Efficiency control of dietary pesticide intake reduction by human biomonitoring.	Goen Thomas Schmidt Lukas Lichtensteiger Walter; Schlumpf Margret	International journal of hygiene and environmental health, (20170300) Vol. 220, No. 2 Pt A, pp. 254-260. Electronic Publication Date: 23 Nov 2016 Journal code: 100898843. E-ISSN: 1618-131X. L-ISSN: 1438-4639.	Non-relevant by full text	Pilot study of differences in urinary levels of several pesticides (including glyphosate) for two individuals following a conventional or organic diet. Limited data; not relevant for risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate residues in feed.	Goldstein, D. A.	Journal of Animal Science (2017), Volume 95, 367 p., Suppl. 4 ISSN: 0021-8812 DOI: 10.2527/asasann.2017.810	Non-relevant by full text	Overview of MRL process and summary of glyphosate in food and feed.			
Field-amplified sample injection and sweeping micellar electrokinetic chromatography in analysis of glyphosate and aminomethylphosphonic acid in wheat.	Gotti Roberto Fiori Jessica Bosi Sara; Dinelli Giovanni	Journal of chromatography. A, (2019 May 11) . Electronic Publication Date: 11 May 2019 Journal code: 9318488. E-ISSN: 1873-3778. L-ISSN: 0021-9673.	Non-relevant by full text	Primarily an analytical methods paper. The authors report the analysis of 4 commercial wheat flour samples (residues below detection limit) and one wheat grain sample (glyphosate residues 243 mg/kg). The grain sample was from plants sprayed pre-harvest in a growth chamber; no details on application rate and timing provided, so cannot assess residues.			
Method validation and application of a selective multiresidue analysis of highly polar pesticides in food matrices using hydrophilic interaction liquid chromatography and mass spectrometry	Herrera Lopez, Sonia; Scholten, Jos; Kiedrowska, Barbara; de Kok, Andre	Journal of Chromatography A (2019), 1594, 93-104 CODEN: JCRAEY; ISSN: 0021-9673	Non-relevant by full text	Analytical method; no monitoring data.			
Flow injection spectrophotometric determination of glyphosate herbicide in wheat grains via condensation reaction with p-dimethylaminobenzaldehyde	Jan, Muhammad Rasul; Shah, Jasmin; Muhammad, Mian; Ara, Behisht	South African Journal of Chemistry (2018), 71(1), 39-45 CODEN: SAJCDG; ISSN: 0379-4350	Non-relevant by full text	This is primarily an analytical method paper. No details of analysis of real samples included, just overall average of 62 wheat grain samples from South Africa.			
Glyphosate monitoring in water, foods, and urine reveals an association between urinary glyphosate and tea drinking: a pilot study.	John, J.; Liu He; Liu, H.	International Journal of Environmental Health Engineering (2018), Volume 7, 2 p., 25 refs. ISSN: 2277-9183 DOI: 10.4103/ijehe.ijehe_5_17 Published by Medknow Publications, Mumbai URL (Availability): http://www.ijehe.org/article.asp?issn=2277-9183; year=2018; month=1; page=2	Non-relevant by full text	Pilot study in non-EU country (US) with limited analysis of food and urine samples, using semi-quantitative ELISA assay developed for water and with no reporting of validation in other matrices. Exposure assessment not relevant for EU consumers.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
HPLC determination and comparative analysis of persistent organic compounds in different environmental matrices	Khan, Nikhat; Ali, Maham; Yaqub, Ghazala; Sadiq, Zubi	Asian Journal of Chemistry, (2016) Vol. 28, No. 2, pp. 339-342. CODEN: AJCHEW. ISSN: 0970-7077.	Non-relevant by full text	No analytical results (or even validation data) for glyphosate			
Experimental and theoretical determination of pesticide processing factors to model their behavior during virgin olive oil production	Lopez-Blanco, Rafael; Moreno-Gonzalez, David; Nortes-Mendez, Rocio; Garcia-Reyes, Juan F.; Molina-Diaz, Antonio; Gilbert-Lopez, Bienvenida	Food Chemistry (2018), 239, 9-16 CODEN: FOCHDJ; ISSN: 0308-8146	Non-relevant by full text	No glyphosate data included in article (only trimesium ion).			
X-ray Spectroscopy Fostering the Understanding of Foliar Uptake and Transport of Mn by Soybean (Glycine max L. Merrill); Kinetics, Chemical Speciation, and Effects of Glyphosate.	Machado Bianca A; Gomes Marcos H F; Marques Joao P R; de Carvalho Hudson W P Otto Rafael	Journal of agricultural and food chemistry, (2019 Nov 27) Vol. 67, No. 47, pp. 13010-13020. Electronic Publication Date: 13 Nov 2019 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Non-relevant by full text	No data on the transport of glyphosate in the crop; No glyphosate residue data; Furthermore it is not good agriculture practice to tank mix glyphosate with a fertilizer.			
Laboratory Rodent Diets Contain Toxic Levels of Environmental Contaminants: Implications for Regulatory Tests.	Mesnage Robin; Defarge Nicolas; Seralini Gilles-Eric; Rocque Louis-Marie; Spiroux de Vendomois Joel	PLoS one, (2015) Vol. 10, No. 7, pp. e0128429. Electronic Publication Date: 2 Jul 2015 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC4489719.	Non-relevant by full text	Measures levels of GMOs and various contaminants (including glyphosate and AMPA) in rodent diets.			
Herbicide Absorption and Translocation in Plants using Radioisotopes.	Nandula, Vijay K. [Reprint Author]; Vencill, William K.	Weed Science, (2015) Vol. 63, No. Sp. Iss. 1, pp. 140-151. http://www.wssa.net/WSSA/Pubs/WeedSci.htm . CODEN: WEESA6. ISSN: 0043-1745. E-ISSN: 1550-2759.	Non-relevant by full text	Methodology paper on the conduct of absorption and translocation studies of herbicides using radioisotopes.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Chronic dietary risk characterization for pesticide residues: A ranking and scoring method integrating agricultural uses and food contamination data	Nougadere, Alexandre; Reninger, Jean-Cedric; Volatier, Jean-Luc; Leblanc, Jean-Charles	Food and Chemical Toxicology, (2011) Vol. 49, No. 7, pp. 1484-1510. CODEN: FCTOD7. ISSN: 0278-6915.	Non-relevant by full text	The article presents a method to identify pesticide residues and foodstuffs for inclusion in national monitoring programs with different priority levels. In the article a lot active substances are included. For glyphosate the conclusion does not change the endpoint for the dietary risk assessment.			
Direct electrochemical detection of glyphosate at carbon paste electrode and its determination in samples of milk, orange juice, and agricultural formulation.	Oliveira Pamela C; Maximiano Elizabete M; Oliveira Poliane A; Camargo Junior S; Fiorucci Antonio R; Arruda Gilberto J	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2018) Vol. 53, No. 12, pp. 817-823. Electronic Publication Date: 16 Oct 2018 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	Analytical method. Study did not include analysis of any relevant samples (only fortified samples).			
Yield, germination and herbicide residue in seeds of preharvest desiccated wheat	Perboni, Lais Tessari (Reprint); Agostinetto, Dirceu; Cechin, Joanei; Zandoni, Renan Ricardo; Farias, Humberto De Souza Vargas, Leandro	JOURNAL OF SEED SCIENCE, (JUL-SEP 2018) Vol. 40, No. 3, pp. 304-312. ISSN: 2317-1537.	Non-relevant by full text	Provides information on glyphosate pre-harvest use in wheat. Not a relevant use for renewal.			
Influence of chemical pesticides on the survival of lactic acid bacteria in silage inoculants.	Poppi, A. C. O.; Osmari, M. P.; Lazzari, G.; Poppi, E. C.; Mari, L. J.; Jobim, C. C.; Daniel, J. L. P. Editor(s): Gerlach, K.; Suedekum, K. H.	Proceedings of the International Silage Conference (XVIII ISC 2018), 24-26 July 2018, Bonn, Germany (2018), pp. 312-313, 3 refs. ISBN: 978-3-86972-044-9 Published by: Organising Committee, XVIII International Silage Conference 2018, Bonn Conference: Proce	Non-relevant by full text	Effect of inadvertant contamination of silage inoculant with glyphosate in spray tank.			
Uptake, translocation, distribution and metabolism of glyphosate in target weeds and non-target tea trees in tea garden.	Tang XingYan; Shao ZengLang; Yang LuCheng; Pei ShaoFen; Yue PengXiang; Wang XiaoXia; Tang, X. Y.; Shao, Z. L.; Yang, L. C.; Pei, S. F.; Yue, P. X.; Wang, X. X.	Journal of Food Safety and Quality (2018), Volume 9, Number 18, pp. 4900-4905, 54 refs. ISSN: 2095-0381 Published by: Journal of Food Safety and Quality, Beijing URL (Availability): http://www.chinafoodj.com/	Non-relevant by full text	The article does not include new data on metabolism of glyphosate in tea, but rather summarizes existing data.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Environmental life cycle assessment of fresh and processed sweet cherries in southern Italy	Tassielli, G.; Notarnicola, B.; Renzulli, P. A.; Arcese, G.	Journal of Cleaner Production (2018), 171, 184-197 CODEN: JCROE8; ISSN: 0959-6526	Non-relevant by full text	Life cycle analysis of different production methods in cherry orchards. Glyphosate is one of numerous pesticides used during cultivation. No observations related to glyphosate in study.			
In situ colorimetric detection of glyphosate on plant tissues using cysteamine-modified gold nanoparticles.	Tu Qin Yang Tianxi; Qu Yanqi; Gao Siyue; Zhang Zhiyun; He Lili Zhang Qingmiao; Wang Yilei; Wang Jinyi	The Analyst, (2019 Mar 21) Vol. 144, No. 6, pp. 2017-2025. Electronic Publication Date: 31 Jan 2019 Journal code: 0372652. E-ISSN: 1364-5528. L-ISSN: 0003-2654.	Non-relevant by full text	Analytical method for in situ visual detection of glyphosate in field treated samples. Not relevant for risk assessment.			
Detection of dietary DNA, protein, and glyphosate in meat, milk, and eggs.	Van Eenennaam A L; Young A E	Journal of animal science, (2017 Jul) Vol. 95, No. 7, pp. 3247-3269. Journal code: 8003002. E-ISSN: 1525-3163. L-ISSN: 0021-8812.	Non-relevant by full text	Review of existing information on glyphosate residues in meat, milk and eggs. No new data.			
Glyphosate in yam from Ghana	Wumbei, Abukari; Goeteyn, Liliane; Lopez, Edelbis; Houbraken, Michael; Spanoghe, Pieter	Food Additives & Contaminants, Part B: Surveillance (2019) Ahead of Print CODEN: FACPBB; ISSN: 1939-3210	Non-relevant by full text	Description of analytical method and use in analyzing yam samples from Ghana. Some samples had detectable residues (>0.04 mg/kg), all below the LOQ of 0.12 mg/kg. Not relevant - method had low recovery (34%) and results not relevant for EU.			
Detection of glyphosate residues in companion animal feeds.	Zhao Jiang Pacinka Steven; Richards Brian K; Steenhuis Tammo Wu Jing Simpson Kenneth Hay Anthony G	Environmental pollution (Barking, Essex : 1987), (2018 Dec) Vol. 243, No. Pt B, pp. 1113-1118. Electronic Publication Date: 3 Sep 2018 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Analysis of glyphosate residues in companion animal feed.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of Herbicides on Flowering.	Carpenter David J; Boutin Celine; Casey Carlene S; Mathiasen Solvejg K; Strandberg Beate; Damgaard Christian	Environmental toxicology and chemistry, (2020 May) Vol. 39, No. 6, pp. 1244-1256. Electronic Publication Date: 29 Apr 2020 Journal code: 8308958, E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Although Glyphos and Glyphogan are both glyphosate 360 SL formulations, they do however contain different surfactant systems. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, this means that findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the risk assessment for EU renewal. The surfactant system used in glyphos and glyphogan are respectively - tallow ethoxylate based or oxyethoxylate based, whereas the surfactant used in MON 52276 is ammonium based.			
Disruption of cytochrome P450 enzymes in the liver and small intestine in chicken embryos in ovo exposed to glyphosate.	Fathi Mohamed Ahmed; Han Guofeng; Kang Ruifen; Shen Dan; Shen Jiakun; Li Chunmei; Fathi Mohamed Ahmed	Environmental science and pollution research international, (2020 May) Vol. 27, No. 14, pp. 16865-16875. Electronic Publication Date: 6 Mar 2020 Journal code: 9441769, E-ISSN: 1614-7499, L-ISSN: 0944-1344.	Non-relevant by full text	The publication investigates the effects on antioxidant enzyme activity, histomorphology on the liver and small intestine. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment.			
Effect of induced chronic glyphosate toxicity in liver and kidneys of kuroiler birds.	Kalai, K.; Upadhyaya, T. N.; Pathak, D. C.; Roy, D. C.; Sarma Satya; Saikia, G. K.; Satya, S.	Indian Journal of Veterinary Pathology (2019), Volume 43, Number 3, pp. 211-216 ISSN: 0250-4758 DOI: 10.5958/0973-970X.2019.00042.7 Published by: Indian Association of Veterinary Pathologists, Izatnagar URL (Availability): http://www.indianjournals.com/ijor.aspx?target=ijor&ijvp&volume=43&issue=3&article=010	Non-relevant by full text	The publication investigates biochemical, histopathological and cellular ultrastructural parameters of blood and liver tissues and only findings on cellular/molecular level are reported. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment.			
acute and chronic effect of Roundup herbicide on histopathology and enzymatic antioxidant system of <i>Oncorhynchus mykiss</i>	Meshkini, S.; Rahimi-Arnaei, M.; Tafi, A. A.	International journal of environmental science and technology (Nov 2019), Volume 16, Number 11, pp. 6847-6856, 10 p. ISSN: 1735-1472	Non-relevant by full text	The principal reason for this paper not being relevant is that EPA registration No. 524-529 is a concentrate formulation (50.2%) which contains POEA surfactant. POEA is not permitted for use in formulated herbicidal products in the EU. The article is therefore not relevant to an EU regulatory risk assessment / glyphosate EU renewal.			
Effects of glyphosate, cypermethrin, and chlorpyrifos on hematological parameters of the tegu lizard (<i>Salvator merianae</i>) in different embryo stages.	Mestre Ana Paula; Carletti Julieta Veronica; Amavet Patricia Susana; van der Sloot Imreel Stefanus; Poletta Gisela Laura; Siroski Pablo Ariel	Chemosphere, (2020 Aug) Vol. 252, pp. 126433. Electronic Publication Date: 7 Mar 2020 Journal code: 0320657, E-ISSN: 1879-1298, L-ISSN: 0045-6535.	Non-relevant by full text	The publication investigates haematological parameters on reptiles' embryos and only findings at the cellular/molecular level are reported. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
In vitro effects of glyphosate-based herbicides and related adjuvants on primary culture of hemocytes from <i>Haliotis tuberculata</i> .	Mottier Antoine; Serpentini Antoine; James Adele; Lebel Jean-Marc Dallas Lorna Costil Katherine	Fish & shellfish immunology, (2020 May) Vol. 100, pp. 1-8. Electronic Publication Date: 29 Feb 2020 Journal code: 9505220. E-ISSN: 1095-9947. L-ISSN: 1050-4648.	Non-relevant by full text	The publication investigates in vitro effects on hemocytes and only findings on cellular/molecular level are reported. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment.			
Genotoxicity and oxidative stress in <i>Caiman latirostris</i> hatchlings exposed to pesticide formulations and their mixtures during incubation period.	Odetti L M Lopez Gonzalez E C Romito M L Simoniello M F Poletta G L	Ecotoxicology and environmental safety, (2020 Apr 15) Vol. 193, pp. 110312. Electronic Publication Date: 25 Feb 2020 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	In vivo study on the effects of Glyphosate-based herbicides on eggs of <i>Caiman latirostris</i> . The formulation tested is not the EU representative formulation (GLY Roundup® Full II (66.2%), water-soluble herbicide (12000 mg/L), containing potassium salt) and therefore not relevant for the EU risk assessment.			
Biochemical response and Vermiremediation assessment of three earthworm species (<i>Alma millsoni</i> , <i>Eudrilus eugeniae</i> and <i>Libyodrilus violaceus</i>) in soil contaminated with a Glyphosate-based herbicide	Owagboriaye, Folarin; Dedeke, Gabriel; Bamidele, Julius; Aladesida, Adeyinka; Isibor, Patrick; Feyisola, Roseline; Adeleke, Mistura	Ecological indicators (26 Aug 2019) ISSN: 1470-160X	Non-relevant by full text	This study aims to evaluate the biochemical response and vermiremediation potential of three indigenous earthworm species in glyphosate treated soils. Test design and achieved results are not relateable to an EU level risk assessment for Annex I renewal.			
A glyphosate-based herbicide in a free-choice test on parasitism, emergence, and female-biased sex ratio of 10 <i>Trichogrammatidae</i> .	Pontes, Jonas Pereira; Demolin Leite, Germano Leao; Rodrigues Bispo, Edilson Paulo; Tavares, Wagner de Souza [Reprint Author]; Guimaraes de Menezes, Clauber Wagner; Wilcken, Carlos Frederico; Zanoncio, Jose Cola	Journal of Plant Diseases and Protection, (FEB 2020) Vol. 127, No. 1, pp. 73-79. http://www.springer.com/life+sciences/plant+sciences/journal/41348 . ISSN: 1861-3829. E-ISSN: 1861-3837.	Non-relevant by full text	Roundup Original DI® (a mixture of IPA and diammonium salts) is not the representative formulation for EU, therefore the article is not relevant for the EU risk assessment / glyphosate renewal.			
Effects of parental exposure to glyphosate-based herbicides on embryonic development and oxidative status: a long-term experiment in a bird model.	Ruuskanen Suvii; Rainio Miia J; Uusitalo Maiju; Helander Marjo Saikkonen Kari	Scientific reports, (2020 Apr 14) Vol. 10, No. 1, pp. 6349. Electronic Publication Date: 14 Apr 2020 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC7156732.	Non-relevant by full text	Roundup Flex is a potassium salt based formulation and has a different surfactant system compared to the EU representative formulation. Therefore, this publication is not relevant for the EU risk assessment / glyphosate renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Impact of glyphosate and chlorthaliprophos on chemical and biological properties of a lateritic soil	Shitha, Cr; Devi, Km durga; Abraham, Ct	Pesticide Research Journal (2017), 29(1), 68-74 CODEN: PRJEB4; ISSN: 0970-6763	Non-relevant by full text	Roundup SL is commercialized in India and it is not the EU representative formulation thus this article is not relevant for the EU risk assessment / glyphosate renewal. In addition, the study design, the test system and the species tested are not relevant for the European regulatory purposes. The tested soil (even for lab tests) is a local one in India. The tested species (<i>Perionyx excavatus</i> in the case of earthworms) are also native. In addition, the field experiments are not dealing with EU representative conditions. No experiment was performed according to any of the EU recommended testing guidances/designs. No useful endpoint can be derived.			
Chronic exposure to glyphosate induces transcriptional changes in honey bee larva: A toxicogenomic study.	Vazquez Diego E Latorre-Estivalis Jose M; Ons Sheila Farina Walter M	Environmental pollution (Barking, Essex : 1987), (2020 Jun) Vol. 261, pp. 114148. Electronic Publication Date: 7 Feb 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	The publication investigates the effects of chronic exposure of a single concentration of pure glyphosate on honey bee larvae regarding their gene expression profile using a transcriptomic approach. However, the study design and the test system are not relevant for the European regulatory purposes. The experiment was not performed according to any of the EU recommended testing guidances/designs. No useful endpoint can be derived. No positive control was tested.			
Measurement of genetic damage in <i>Apis mellifera</i> caused by agrochemicals using comet assay.	Villar, Silvia (correspondence) Villar, Silvia (correspondence) Villar, Silvia (correspondence) Ojeda, Pilar	Current Topics in Toxicology, (2019) Vol. 15, pp. 133-139. Refs: 33 ISSN: 0972-8228	Non-relevant by full text	The publication investigates the effects of acute exposure of a glyphosate formulation on adult honey bee DNA. Only findings at the cellular/molecular level are reported. Enzyme, cellular and molecular level endpoints are not relevant to EU level ecotoxicology risk assessment. The experiment was not performed according to any of the EU recommended testing guidances/designs.			
Effects of glyphosate-based herbicide on royal jelly production of <i>Apis mellifera</i> (Hymenoptera: Apidae) in field conditions	Chaves, Adriana (Reprint); Faita, Marcia R.; Ferreira, Bruno L.; Poltronieri, Alex S.; Nodari, Rubens O.	JOURNAL OF APICULTURAL RESEARCH, (12 2020 NOV 2020) . ISSN: 0021-8839.	Non-relevant by full text	This poorly described field study with honey bees was conducted in Brazil and therefore, does not deal with EU representative uses/conditions. In addition, the test item was not clearly identified, the test item purity is not stated, and the focus (royal jelly production) and design (hives without queens, for example) of the study are not relevant for the European regulatory purposes. The test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. For studies conducted in Brazil, Roundup Original is occasionally used which contains POEA and is therefore not relevant to the EU as POEA is banned in the EU.			
Glyphosate-based herbicide toxicophenomics in marine diatoms: impacts on primary production and physiological fitness	de Carvalho, Ricardo Cruz; Feijao, Eduardo; Matos, Ana Rita; Cabrita, Maria Teresa; Novais, Sara C.; Lemos, Marco F. L.; Cacador, Isabel; Marques, Joao Carlos; Reis-Santos, Patrick; et al.	Applied Sciences, (2020) Vol. 10, No. 21, pp. 7391. CODEN: ASPCC7. ISSN: 2076-3417.	Non-relevant by full text	The test design used does not reflect recognised approaches for EU level regulatory risk assessment. Furthermore, test substance concentrations in the medium were not analytically determined. All validity criteria according to OECD TG 201 cannot be evaluated. Growth rate was determined at 48h (instead of 72h). The growth medium and the exposure phase are not clearly described. In addition, a glyphosate based formulation was tested which is not the representative formulation for the glyphosate EU renewal (the representative formulation is MON 52276).			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Impact of glyphosate herbicide stress on metabolic growth and lipid inducement in <i>Chlorella sorokiniana</i> UUIND6 for biodiesel production.	Jaiswal, Krishna Kumar; Kumar, Vinod [Reprint Author]; Vlaskin, Mikhail S.; Nanda, Manisha	Algal Research-Biomass Biofuels and Bioproducts, (OCT 2020) Vol. 51, pp. Article No.: 102071. http://www.sciencedirect.com/science/journal/22119264 . ISSN: 2211-9264. E-ISSN: 2211-9264.	Non-relevant by full text	The formulations used in this study contain POEA surfactant which is not permitted in formulated herbicidal products in the EU. The tested individuals were collected from a wastewater source and previous pesticide exposure cannot be excluded. No analytical verifications of the test item concentrations in the test media were conducted. The test is not conducted according to the OECD TG 201 and therefore, it is not possible to confirm whether the study meets the validity criteria. No statistical analysis was provided/conducted. In the preliminary test, behaviour of the control after 96h is not properly reported. IC50 was calculated at 96h (instead of 72h as proposed by the OECD TG 201).			
Age matters: Submersion period shapes community composition of lake biofilms under glyphosate stress	Khadra, Melissa (Reprint); Amyot, Marc Planas, Dolores Girard, Catherine	FACETS, (1 2018 NOV 2018) Vol. 3, pp. 934-951. ISSN: 2371-1671.	Non-relevant by full text	This study, investigating the effects of a pulse exposure of glyphosate on the community composition and chlorophyll-a concentrations of lake biofilms at different colonization stages (2 months, 1 year, and 20 years), presents test design and system that are not relevant for the European regulatory purposes. The generated outcomes of the study (glyphosate and phosphorous concentrations, chlorophyll-a concentrations and community composition between different treatments) are not relatable to the EU level risk assessment. In addition, the publication is not dealing with EU representative conditions, although the exposure to glyphosate is under laboratory conditions, the biological community and the water were obtained from a lake in Canada. Due to the limitations of the study design reflecting a surface water exposure system specific to Canada, it is difficult to relate the findings to an EU situation from a risk assessment perspective.			
Earthworms <i>Eisenia fetida</i> recover from Roundup exposure.	Pochron, S. T.; Mirza, A.; Mezie, M.; Chung Eugene; Ezedum, Z.; Geraci, G.; Mari, J.; Meiselbach, C.; Shamberger, O.; Smith, R.; Tucker, W. J.; Zafar, S.; Chung, E.	Applied Soil Ecology (2021), Volume 158 ISSN: 0929-1393 DOI: 10.1016/j.apsoil.2020.103793 Published by: Elsevier B.V., Amsterdam URL (Availability): https://www.sciencedirect.com/science/article/pii/S0929139320307228	Non-relevant by full text	Roundup Ready to use III is a mixture of IPA salt at 2% and pelargonic acid at 2%. Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity). In addition, in this study the source of the tested earthworm is insufficiently described so previous exposure to pesticides cannot be excluded. Soil moisture was not reported and only one concentration was tested. The article is therefore not relevant to the EU renewal.			
Waterborne agrichemicals compromise the anti-predatory behavior of zebrafish.	Pompermaier Aline; Barcellos Leonardo Jose Gil Pompermaier Aline; Koakoski Gessi; Barcellos Leonardo Jose Gil Kirsten Karina; Soares Suelen Mendonca; Fortuna Milena; Barcellos Leonardo Jose Gil Kalichak Fabiana Idalencio Renan; Koakoski Gessi; Barcellos Leonardo Jose Gil Barreto Rodrigo Egydio	Environmental science and pollution research international, (2020 Nov) Vol. 27, No. 31, pp. 38559-38567. Electronic Publication Date: 4 Jul 2020 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Study design and test system in the study are not relevant for the European regulatory purposes. Exposure not confirmed, test item identity not confirmed. Fish were only exposed for 30 minutes and the outcome of anti-predator behaviour after exposure is not relevant for the European regulatory purpose / no endpoints presented that could be applied to an EU level risk assessment for renewal purposes.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Stress response in terrestrial isopods: A comparative study on glycaemia.	Roques, Jonathan A. C. [Reprint Author]; Houdelet, Camille; Richard, Freddie-Jeanne	Applied Soil Ecology, (DEC 2020) Vol. 156, pp. Article No.: 103708. http://www.journals.elsevier.com/applied-soil-ecology/#description . ISSN: 0929-1393. E-ISSN: 1873-0272.	Non-relevant by full text	The usefulness of this study is low as it cannot be related to a data requirement. A consequence of low active content (170 g/L) is that the amount of co-formulant applied to the carrots would have been increased, which was not assessed. The exposure is also unrealistic with leaves and carrots soaked in solution for 15 minutes and remaining solution pipetted into the arenas, weekly for 25 days, worst case. The glucose results cannot be related. Characterization of soil (texture like sandy loam and pH) and source was not clearly described, just as moistened compost. Test conditions like temperature and humidity/soil moisture insufficiently described. There is no purity information presented in the paper and the exposure was not confirmed. The endpoints do not inform on risk assessment and is unclear how they can be used in a risk assessment. Therefore the study is not relevant.			
Glyphosate-based herbicides influence antioxidants, reproductive hormones and gut microbiome but not reproduction: A long-term experiment in an avian model.	Ruuskanen Suvi Rainio Miia J; Saikkonen Kari; Saloniemi Irma; Helander Marjo Gomez-Gallego Carlos Selenius Otto Salminen Seppo Collado Maria Carmen	Environmental pollution (Barking, Essex : 1987), (2020 Nov) Vol. 266, No. Pt 1, pp. 115108. Electronic Publication Date: 5 Jul 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	The results cannot be related to the risk assessment and do not inform on population level effects and therefore not relevant. Also, the formulation tested is not relevant (Roundup Flex® - 480 g/L glyphosate, present as 588 g/L [43.8% w.w] of potassium salt of glyphosate with surfactants alkylpolyglycoside and nitrotryl).			
Transcriptomic and metabolomic landscape of the molecular effects of glyphosate commercial formulation on <i>Apis mellifera ligustica</i> and <i>Apis cerana cerana</i> .	Zhao Hang; Li Guilin; Guo Dezheng; Liu Qingxin; Gao Zheng Wang Ying; Wang Hongfang; Liu Zhenguo Guo Xingqi Xu Baohua	The Science of the total environment, (2020 Nov 20) Vol. 744, pp. 140819. Electronic Publication Date: 12 Jul 2020 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	This study, dealing with the mode of action of glyphosate on bees at the molecular level (the numbers of differentially expressed genes and metabolites under glyphosate stress), presents findings based on cellular/molecular level that cannot be related to the risk assessment. The generated outcomes are not relatable to the EU level risk assessment. These effects do not necessarily proof correspondance to adverse ecotoxicological effects.			
Effects of chronic glyphosate exposure on antioxidative status, metabolism and immune response in tilapia (GIFT, <i>Oreochromis niloticus</i>).	Zheng Tao; Gu Zhengyan; He Qin Jia Rui; Cao Liping; Du Jinliang Xu Pao; Yin Guojun	Comparative biochemistry and physiology. Toxicology & pharmacology : CBP, (2021 Jan) Vol. 239, pp. 108878. Electronic Publication Date: 28 Aug 2020 Journal code: 100959500. ISSN: 1532-0456. L-ISSN: 1532-0456.	Non-relevant by full text	This study, evaluating the chronic toxicity of glyphosate on fish (tilapia) via determining antioxidative status, metabolism, inflammation and immune response, presents findings based on cellular/molecular level that cannot be related to the risk assessment. The generated outcomes are not relatable to the EU level risk assessment. These effects do not necessarily proof correspondance to adverse ecotoxicological effects. In addition, the test item has not been identified at all.			
In vitro Interference of a Glyphosate Commercial Formulation with the Stimulation of Ovarian Maturation by Progesterone, in the Estuarine Crab <i>Neohelice granulata</i> .	Canosa Ivana S; Silveyra Gabriela R; Lonne Maria Noelia; Medesani Daniel A; Rodriguez Enrique M	Bulletin of environmental contamination and toxicology, (2021 Apr) Vol. 106, No. 4, pp. 583-588. Electronic Publication Date: 28 Jan 2021 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Non-relevant by full text	Roundup Ultramax is not the representative formulation for the glyphosate EU renewal. In addition it contains etheralkylamine ethoxylate (https://www.raiffeisen.com/agrar_sdb/111/ebb9b8dd2b70ad89b50c16a5dc67ec50?variante=), which does have a similar structure to POEA. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Impact of Chronic Exposure to Sublethal Doses of Glyphosate on Honey Bee Immunity, Gut Microbiota and Infection by Pathogens.	Castelli Loreley; Balbuena Sofia; Zunino Pablo; Antunez Karina Branchiccela Belen Liberti Joanito; Engel Philipp Liberti Joanito	Microorganisms, (2021 Apr 15) Vol. 9, No. 4. Electronic Publication Date: 15 Apr 2021 Journal code: 101625893. ISSN: 2076-2607. L-ISSN: 2076-2607. Report No.: PMC-PMC8071123.	Non-relevant by full text	This study evaluates the effects of non-lethal doses of glyphosate (0.1 µg/bee/d) on gut microbiota, immune response and lifespan of honeybees (<i>Apis mellifera</i> hybrids). These findings are largely based on cellular/molecular level and cannot be related to the risk assessment. The data on the bees lifespan cannot be expressed in the form of an endpoint relevant to the risk assessment as only one treatment concentration was tested. Overall, it can be concluded that the generated outcomes are not relatable to the EU level risk assessment.			
Physiological and morphoanatomical effects of glyphosate in <i>Eugenia uniflora</i> , a Brazilian plant species native to the Atlantic Forest biome.	Cruz Carlos Eduardo Souza; Ribeiro Cleberson; da Silva Luzimar Campos de Freitas-Silva Larisse	Environmental science and pollution research international, (2021 May) Vol. 28, No. 17, pp. 21334-21346. Electronic Publication Date: 7 Jan 2021 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Roundup Ultra is not the representative formulation for the glyphosate EU renewal. The surfactant system in the formulated product used in this study was not specified by the author. It is therefore not possible to confirm whether the product used contained POEA surfactant / surfactants of similar chemical structure. Glyphosate based formulations that contain POEA surfactants / surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) / surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the fact that it is unclear whether the formulated product contained POEA / surfactants of similar chemical structure, the article is not considered relevant for use in risk assessment. In addition, it seems that Roundup Ultra is a WG formulation (http://www.roundup.com.br/produtos-da-familia-roundup). The representative formulation for the glyphosate EU renewal is a SL formulation.			
Reproductive toxicity of Roundup WG (R) herbicide: impairments in ovarian follicles of model organism <i>Danio rerio</i> .	Davico, Carla Eliana; Pereira, Aline Guimaraes; Nezzi, Luciane; Jaramillo, Michael Lorenz; de Melo, Madson Silveira; Muller, Yara Maria Rauh; Nazari, Evelise Maria [Reprint Author]	Environmental Science and Pollution Research International, (MAR 2021) Vol. 28, No. 12. https://www.springer.com/journal/11356 . ISSN: 0944-1344. E-ISSN: 1614-7499.	Non-relevant by full text	Roundup WG is not the representative formulation for the glyphosate EU renewal. The representative formulation for the glyphosate EU renewal is MON 52276, which has a nominal glyphosate acid equivalent (a.e.) content of 360 g/L, formulated using glyphosate isopropyl-ammonium salt and a quaternary-ammonium based surfactant. In addition, MON 52276 is a SC formulation whereas Roundup tested in this study is a WG formulation. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. As co-formulants were not identified in this paper, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.			
Changes in microtubule stability in zebrafish (<i>Danio rerio</i>) embryos after glyphosate exposure.	Diaz-Martin Ruben D; Valencia-Hernandez Jesus D; Betancourt-Lozano Miguel; Yanez-Rivera Beatriz Yanez-Rivera Beatriz	Heliyon, (2021 Jan) Vol. 7, No. 1, pp. e06027. Electronic Publication Date: 21 Jan 2021 Journal code: 101672560. ISSN: 2405-8440. L-ISSN: 2405-8440. Report No.: PMC-PMC7829154.	Non-relevant by full text	This study evaluates the effects of glyphosate on microtubule stability in zebrafish embryos (<i>Danio rerio</i>). These findings are based on molecular/cellular level effects and cannot be related to the risk assessment. Overall, it can be concluded that the generated outcomes are not relatable to the EU level risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Damage to lemon tree caused by simulated drift of herbicides.	Galon, L.; Giacobbo, C. L.; Zeist, A. R.; Bastiani, M. O.; Oliveira Fischer, D. L. de; Domingos, K. N. H.; Forte, C. T.; de Oliveira Fischer, D. L.	Revista de Ciencias Agroveterinarias (2020), Volume 19, Number 3, pp. 319-328, 32 refs. ISSN: 2238-1171 DOI: 10.5965/223811711932020319 Published by: Universidade do Estado de Santa Catarina (UDESC), Santa Catarina URL (Availability): https://revistas.udesc.br/index.php/agroveterinaria/article/view/16804	Non-relevant by full text	Effects on local (non-European) species under tropical/ subtropical environmental - resp. agricultural conditions. Effects observed in this greenhouse study conducted in Brazil are not easily transferrable to European conditions, not relevant for the risk assessment. In addition Roundup Original tested in this study is not the representative formulation for the glyphosate EU renewal (the representative formulation is MON 52276). Moreover, it contains POEA surfactants that is not permitted for use in formulated herbicidal products in the EU. Therefore, the findings of this paper are not relevant to the regulatory risk assessment for the glyphosate EU renewal			
Route of exposure influences pesticide body burden and the hepatic metabolome in post-metamorphic leopard frogs.	Glinski Donna A Van Meter Robin J Purucker S Thomas Henderson W Matthew	The Science of the total environment, (2021 Jul 20) Vol. 779, pp. 146358. Electronic Publication Date: 11 Mar 2021 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	This study evaluates the effects of glyphosate exposure on the hepatic metabolome of post-metamorphic southern leopard frogs (L. sphenoccephala). These findings are based on molecular/cellular level effects and cannot be related to the risk assessment. The parameter body burden was not assessed for glyphosate. Overall, it can be concluded that the generated outcomes are not relatable to the EU level risk assessment.			
The bioremediation of glyphosate in soil media by some newly isolated bacteria: The COD, TOC removal efficiency and mortality assessment for Daphnia magna	Korkmaz, Volkan; Yildirim, Numan; Erguven, Gokhan Onder; Durmus, Barbaros; Nuhoglu, Yasar	Environmental Technology & Innovation, (2021) Vol. 22, pp. 101535. CODEN: ETINBL. ISSN: 2352-1864.	Non-relevant by full text	It is not possible to confirm the identity of the glyphosate based herbicide used in the study as only "Glyphosate, 480 gr of active material" is mentioned. The surfactant system in the formulated product used in this study was also not specified by the authors. The composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. Given this uncertainty over what was tested in this study, the paper is not considered relevant to the glyphosate EU renewal.			
pest-specific effects of glyphosate on functional response of a wolf spider	Lacava, Mariangeles; Garcia, Luis Fernando; Viera, Carmen; Michalko, Radek	Chemosphere (Jan 2021), Volume 262, pp. 127785 ISSN: 0045-6535 Source Note: January 2021 v. 262	Non-relevant by full text	It is not possible to confirm the identity of the test item used in the study as only 'Roundup' is mentioned. Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contained POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure. The surfactant system in the formulated product used in this study was also not specified by the author. Given this uncertainty over what was tested in this study, the paper is not considered relevant to the glyphosate EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Litter quality drives nitrogen release, and agricultural management (organic vs. conventional) drives carbon loss during litter decomposition in agro-ecosystems	Martinez-Garcia, L. B. (Reprint); Brussaard, L.; Mainardi, G.; De Deyn, G. B. Korthals, G. W. Korthals, G. W.	SOIL BIOLOGY & BIOCHEMISTRY, (2021 FEB 2021) Vol. 153. ISSN: 0038-0717.	Non-relevant by full text	It is not possible to confirm the identity of the test item used in the study as only 'Roundup' is mentioned. Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contained POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure. The surfactant system in the formulated product used in this study was also not specified by the author. Given this uncertainty over what was tested in this study, the paper is not considered relevant to the glyphosate EU renewal.			
Impacts of a glyphosate-based herbicide on the gut microbiome of three earthworm species (Alma millsoni, Eudrilus eugeniae and Libyodrilus violaceus): A pilot study.	Owagboriaye Folarin; Adeleke Mistura Mesnage Robin; Antoniou Michael N Dedeke Gabriel; Aladesida Adeyinka Adegboyega Taofeek Owa Stephen	Toxicology reports, (2021) Vol. 8, pp. 753-758. Electronic Publication Date: 31 Mar 2021 Journal code: 101630272. E-ISSN: 2214-7500. L-ISSN: 2214-7500. Report No.: PMC-PMC8027525.	Non-relevant by full text	This study investigated the impact of a glyphosate formulation (Roundup Alphée; 7.20 g/L) on the gut microbial communities of three earthworm species (Alma millsoni, Eudrilus eugeniae and Libyodrilus violaceus). The findings are based on molecular/cellular level effects and cannot be related to the risk assessment. In addition, the publication is not dealing with EU representative conditions as the tested species and soils used are native to Africa. Overall, it can be concluded that the generated outcomes are not relatable to the EU level risk assessment.			
Effects of commercial formulations of glyphosate on marine crustaceans and implications for risk assessment under temperature changes.	Parlapiano Isabella; Biantolino Francesca Grattagliano Asia; Ruscito Andrea Libralato Giovanni Prato Ermelinda	Ecotoxicology and environmental safety, (2021 Apr 15) Vol. 213, pp. 112068. Electronic Publication Date: 24 Feb 2021 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	None of the glyphosate formulations tested is the representative formulation for the glyphosate EU renewal. The representative formulation for the glyphosate EU renewal is MON 52276, which has a nominal glyphosate acid equivalent (a.e.) content of 360 g/L, formulated using glyphosate isopropyl-ammonium salt and a quaternary-ammonium based surfactant. Moreover, it is unclear whether the formulations tested contained POEA or not. In the discussion part of this paper, the author states that "Formulations vary between different brands and between different countries. These are cocktails of chemicals composed by glyphosate as active principle (36–48%), water, salts, and co-formulants such as polyoxyethylene tallow amine (POEA). Formulations with POEA are relatively toxic compared to other formulations (Mesnage et al., 2013; Mesnage and Antoniou, 2018)." This statement adds uncertainty concerning the relevance of the findings in the paper to the EU renewal of glyphosate. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the uncertainties associated with the product tested (surfactant system not specified, may contain POEA -> POEA based surfactants are not to be used in agrochemical products in the EU), the article is not considered relevant for use in risk assessment.			
Resting egg banks can facilitate recovery of zooplankton communities after short exposure to glyphosate.	Portinho Jorge L Oliveira Henrique Nunes; Branco Ciro C Z	Ecotoxicology (London, England), (2021 Apr) Vol. 30, No. 3, pp. 492-501. Electronic Publication Date: 1 Mar 2021 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	The study does report on short-term viability and recovery of zooplankton communities after exposure to glyphosate. However, the study design, test system and species tested (study conducted in Brazil with native, wild sampled organisms) are not relevant for the European regulatory purposes. The study design does not resemble any test currently used in a regulatory context and no regulatory relevant endpoints can be derived from this study.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Exposure to sublethal concentrations of the glyphosate-based herbicide Faena® increases sensitivity in the progeny of the American cladoceran <i>Daphnia exilis</i> (Herrick, 1895).	Rodriguez-Miguel Alma; Hernandez-Zamora Miriam; Martinez-Jeronimo Laura; Martinez-Jeronimo Fernando	Environmental science and pollution research international, (2021 Mar 16) . Electronic Publication Date: 16 Mar 2021 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	The glyphosate formulation tested is the representative formulation for the glyphosate EU renewal. The representative formulation for the glyphosate EU renewal is MON 52276, which has a nominal glyphosate acid equivalent (a.e.) content of 360 g/L, formulated using glyphosate isopropyl-ammonium salt and a quaternary-ammonium based surfactant. Moreover, it is unclear whether the formulation tested contained POEA or not. In the introduction of this paper, the author states that "Polyoxyethylene tallow amine (POEA) is a common surfactant included in glyphosate-based herbicides; it is assumed to be the main responsible for the toxicity of the commercial products in some aquatic organisms (Perkins et al. 2000; Thompson et al. 2004)." This statement adds uncertainty concerning the relevance of the findings in the paper to the EU renewal of glyphosate. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the uncertainties associated with the product tested (surfactant system not specified, may contain POEA -> POEA based surfactants are not to be used in agrochemical products in the EU), the article is not considered relevant for use in risk assessment.			
Glyphosate-based herbicides affect behavioural patterns of the livebearer <i>Jenynsia multidentata</i> .	Sanchez Jessica Andrea Albanil; Barros Daniela Marti; Martins Camila De Gaspar Martinez de Los Angeles Bistoni Maria; Ballesteros Maria Laura; Roggio Maria Angelina de Los Angeles Bistoni Maria; Ballesteros Maria Laura	Environmental science and pollution research international, (2021 Feb 12) . Electronic Publication Date: 12 Feb 2021 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	None of the glyphosate formulations tested is the representative formulation for the glyphosate EU renewal. The representative formulation for the glyphosate EU renewal is MON 52276, which has a nominal glyphosate acid equivalent (a.e.) content of 360 g/L, formulated using glyphosate isopropyl-ammonium salt and a quaternary-ammonium based surfactant. Moreover, Roundup Original (RO) and Roundup Transorb (RT) contain POEA (stated by the authors in the Materials and methods part of the paper "RO is a liquid formulation composed of glyphosate isopropylamine salt (IPA) (480 g/L), glyphosate acid equivalent (360 g/L GlyAE) and surfactant MON 0818, the Monsanto code for the POEA designation. RT is also a liquid made from glyphosate isopropylamine salt (IPA), but at 648 g/L, glyphosate acid equivalent, at 480 g/L GlyAE, and POEA.). The 3rd formulation tested was Roundup RWG which is a granular formulation. The representative formulation for the glyphosate EU renewal is a soluble concentrate (SL) The composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the fact that POEA based surfactants are not to be used in agrochemical products in the EU, the article is not considered relevant for use in risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Roundup causes high levels of mortality following contact exposure in bumble bees	Straw, Edward A. (Reprint); Carpentier, Edward N.; Brown, Mark J. F.	JOURNAL OF APPLIED ECOLOGY, (6 2021 APR 2021) . ISSN: 0021-8901.	Non-relevant by full text	The products used in the study are not related to the representative formulation for the glyphosate EU renewal. 'Roundup No glyphosate' contains 'acetic acid' only. 'Weedol' is a mixture of glyphosate and pyraflufen-ethyl and 'Roundup Ready-To-Use' is a mixture of glyphosate and pelargonic acid (effects observed cannot be attributed to the substance of concern, i.e. mixture toxicity). The surfactant system used in 'Roundup ProActive' is alkyl polysaccharide + nitronyl based, whereas the surfactant used in the representative formulation (MON 52276) for the glyphosate EU renewal is quaternary-ammonium based. The composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. As the performance / efficacy of herbicidal formulations is dependant on the surfactant system / co-formulants, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal. Further points for clarification: • The authors acknowledge in the paper that tier methodology is not designed to replicate field realistic exposure (spraying conditions or label recommended application rates), it is instead designed to assess the lethality (hazard) the herbicide products pose to bumble bees. • The results from this study are not surprising considering that the bees were confined and directly sprayed with high volumes of the formulations and in some instances at application rates that greatly exceeded registered rates. • It cannot be concluded from this study that there will be unacceptable risk to bees from applications of lawn and garden and agricultural Roundup formulations when used according to the label. Users should always read the label and use pesticides safely. • For example, the label for Roundup Speed Ultra, which only contains acetic acid and water, states that the formulation is dangerous to bees and to protect bees and pollinating insects do not apply to plants when in flower, do not use where bees are actively foraging, and do not apply when flowering weeds are present. • Lawn and garden products are intended for spot applications, to the leaves of plants, and are not intended to be directly applied to insects, including bees. • Contact toxicity studies with bees, following the established OECD 214 test guideline used to assess acute contact toxicity to bees, have demonstrated no unacceptable risk for the lawn and garden and agricultural formulations to bees. • EFSA in their recent renewal assessment report for glyphosate, concluded that glyphosate and the representative formulation pose negligible acute and chronic risk to larval and adult bees (EFSA, 2015).			
Ecotoxicological Studies on the Effect of Roundup®) (Glyphosate Formulation) on Marine Benthic Microalgae.	Sylwestrzak Zuzanna; Zgrundo Aleksandra; Pniewski Filip	International journal of environmental research and public health, (20210120) Vol. 18, No. 3. Electronic Publication Date: 20 Jan 2021 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: PMC-PMC7908156.	Non-relevant by full text	It is not possible to confirm the identity of the test item used in the study as only 'Roundup' is mentioned. Roundup is a brand that contains multiple glyphosate-based herbicides, that contain different co-formulants. Of most importance to the toxicity profile associated with a particular product is whether that product contained POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure. POEA surfactant was discussed on multiple occasions in the paper. These statements add uncertainty concerning the relevance of the findings in the paper to the EU renewal of glyphosate. Given this uncertainty over what was tested in this study, the paper is not considered relevant to the glyphosate EU renewal.			
Toxicity test of individual and combined toxic effects of glyphosate herbicide and heavy metals on chicken embryos.	Szabo, R.; Csonka, D.; Major, L.; Lehel, J.; Budai, P.	AGROFOR International Journal (2020), Volume 5, Number 3, pp. 64-71, 16 refs. ISSN: 2490-3434 DOI: 10.7251/AGRENG2003064S Published by: Faculty of Agriculture, University of East Sarajevo, Istocno Sarajevo URL (Availability): http://agrofor.ues.rs.ba/paper.php?id=333	Non-relevant by full text	Glialka Star is not the representative formulation for the glyphosate EU renewal. In addition it contains etheralkylamine ethoxylate (https://www.gazdabolt.hu/gyomirto-szer/1710-glialka-star-1-l.html ; under "Dokumentok"), which does have a similar structure to POEA. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Physiological and metagenomic strategies uncover the rhizosphere bacterial microbiome succession underlying three common environmental stresses in cassava.	Zeng Hongqiu; Xu Haoran; Liu Guoyin; Wei Yunxie Zhang Jiachao Shi Haitao	Journal of hazardous materials, (2021 Jun 05) Vol. 411, pp. 125143. Electronic Publication Date: 14 Jan 2021 Journal code: 9422688. E-ISSN: 1873-3336. L-ISSN: 0304-3894.	Non-relevant by full text	The study reports on dynamics of rhizosphere bacterial microbiome of cassava under glyphosate exposure. The reported results are entirely on a molecular or cellular level and are hence not relatable to the EU level risk assessment. Cassava plant growth is also reported, but only graphically and it is not the scope of the publication. The study is therefore considered non-relevant.			
Evaluation of Foeniculum vulgare impact on glyphosate hepato-toxicity in Nile tilapia: Biochemical, molecular and histopathological study	Abdelmagid, Afaf D.; El Asely, Amel M.; Said, Alshaimaa M.	Aquaculture Research, (2021) pp. Ahead of Print. CODEN: AQREFC. ISSN: 1355-557X.	Non-relevant by full text	The findings of this study are only based on cellular and molecular level that cannot be related to the risk assessment. The materials and methods section refers to an ecotoxicological LC50 endpoint, for which no information is provided.			
Predictive classification-based QSTR models for toxicity study of diverse pesticides on multiple avian species	Banjare, Purusottam; Singh, Jagadish; Roy, Partha Pratim	Environmental Science and Pollution Research, (2021) Vol. 28, No. 14, pp. 17992-18003. CODEN: ESPLEC. ISSN: 0944-1344.	Non-relevant by full text	This article deals with general pesticide QSAR/QSTR effects models (not glyphosate specific) for birds, where glyphosate or a relevant metabolite are not the focus of the publication.			
Resistance, resilience, and functional redundancy of freshwater bacterioplankton communities facing a gradient of agricultural stressors in a mesocosm experiment.	Barbosa da Costa Naila; Shapiro B Jesse Barbosa da Costa Naila; Fugere Vincent; Hebert Marie-Pier; Beisner Beatrix E; Fussmann Gregor F; Shapiro B Jesse Fugere Vincent; Xu Charles C Y; Barrett Rowan D H; Bell Graham; Fussmann Gregor F; Gonzalez Andrew; Shapiro B Jesse	Molecular ecology, (2021 Jul 29). Electronic Publication Date: 29 Jul 2021 Journal code: 9214478. E-ISSN: 1365-294X. L-ISSN: 0962-1083.	Non-relevant by full text	Roundup® Super Concentrate contains POEA. This is clearly stated in the article by Muller et al. (2021): Toxicological Effects of Roundup(®) on Drosophila melanogaster Reproduction (Toxics 2021, 9, 161. https://doi.org/10.3390/toxics9070161). Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Biomarkers of exposure and effect in the armoured catfish <i>Hoplosternum littorale</i> during a rice production cycle	Fanton, Noelia; Cazenave, Jimena; Michlig, Melina P.; Repetti, Maria R.; Rossi, Andrea	Environmental pollution (15 Oct 2021), Volume 287, pp. 117356 ISSN: 0269-7491 Source Note: 15 October 2021 v. 287	Non-relevant by full text	This higher tier field study under the realistic conditions that the armoured catfish <i>Hoplosternum littorale</i> is exposed to a variety of pesticides during a rice production cycle is conducted in a rice field in Argentina. Therefore, this publication is considered not relevant because it does not deal with EU representative conditions. In addition, although metabolite AMPA bioaccumulation in fish liver and muscle was measured, the observed effects are caused by a mixture of compounds (mixture toxicity). No control group was used.			
Glyphosate exposure disturbs the bacterial endosymbiont community and reduces body weight of the predatory ladybird beetle <i>Harmonia axyridis</i> (Coleoptera: Coccinellidae).	Gao Xueke Hu Fangmei Zhang Shuai Luo Junyu; Zhu Xiangzhen; Wang Li; Zhang Kaixin; Li Dongyang; Ji Jichao; Niu Lin; Wu Changcai Cui Jinjie	The Science of the total environment, (2021 Oct 10) Vol. 790, pp. 147847. Electronic Publication Date: 20 May 2021 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	The findings of this study do not generate endpoints that are relatable to the EU level risk assessment. Larvae of the non-target leaf-dwelling predatory ladybird beetle <i>Harmonia axyridis</i> were orally exposed to two different glyphosate concentration in sucrose solution. NTA oral exposure in the lab cannot be integrated into the EU RA scheme. Furthermore, some findings are based on cellular and molecular level that cannot be related to the risk assessment.			
Widespread agrochemicals differentially affect zooplankton biomass and community structure.	Hebert Marie-Pier; Fugere Vincent; Barrett Rowan D H; Bell Graham; Gonzalez Andrew; Fussmann Gregor F Hebert Marie-Pier; Fugere Vincent; Beisner Beatrix E; Barbosa da Costa Naila; Barrett Rowan D H; Shapiro B Jesse; Fussmann Gregor F Hebert Marie-Pier; Fugere Vincent; Beisner Beatrix E Fugere Vincent; Beisner Beatrix E; Barrett Rowan D H; Bell Graham; Gonzalez Andrew; Fussmann Gregor F Fugere Vincent Barbosa da Costa Naila; Shapiro B Jesse Barrett Rowan D H Shapiro B Jesse Yargeau Viviane	Ecological applications : a publication of the Ecological Society of America, (2021 Jul 21) pp. e02423. Electronic Publication Date: 21 Jul 2021 Journal code: 9889808. ISSN: 1051-0761. L-ISSN: 1051-0761.	Non-relevant by full text	Roundup® Super Concentrate contains POEA. This is clearly stated in the article by Muller et al. (2021): Toxicological Effects of Roundup(®) on <i>Drosophila melanogaster</i> Reproduction (Toxics 2021, 9, 161. https://doi.org/10.3390/toxics9070161). Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The bioremediation of glyphosate in soil media by some newly isolated bacteria: The COD, TOC removal efficiency and mortality assessment for <i>Daphnia magna</i>	Korkmaz, Volkan; Yildirim, Numan; Erguven, Gokhan Onder; Durmus, Barbaros; Nuhoglu, Yasar	Environmental technology & innovation (May 2021), Volume 22, pp. 101535 ISSN: 2352-1864 Source Note: May 2021 v. 22	Non-relevant by full text	The study design and the test system are not relevant for the European regulatory purposes. <i>Daphnia magna</i> was exposed to filtrated water taken from soil previously treated with a single concentration of 1000 mg glyphosate/L (not clear whether sprayed onto or mixed in). It is not possible to know which is the real concentration at which <i>D. magna</i> was exposed. In addition, the test item was not identified.			
Evaluating the impact of post-emergence weed control in honeybee colonies located in different agricultural surroundings.	Macri, I. N.; Vazquez, D. E.; Pagano, E. A.; Zavala, J. A.; Farina, W. M.	Insects (2021), Volume 12, Number 2, 80 refs. ISSN: 2075-4450 DOI: https://doi.org/10.3390/insects12020163 Published by: MDPI AG, Basel URL (Availability): https://www.mdpi.com/2075-4450/12/2/163	Non-relevant by full text	The publication is dealing with genetically modified crops, which is not relevant for the glyphosate EU renewal. In addition, the experiment was performed with a mixture of 3 commercially formulated herbicides: an atrazine-based herbicide (Gesaprim® Syngenta), a 2,4-D-based herbicide (Voleris® Syngenta) and a glyphosate-based herbicide (Sulfosato Touchdown® Syngenta), thus the effect cannot be attributable to the substance of concern and can be seen as a consequence of the mixture toxicity. Based on the information in the safety data sheet provided on Syngenta's webpage (https://www.syngenta.com.ar/product/crop-protection/herbicida-no-selectivo/sulfosato-touchdown), Sulfosato Touchdown formulation contains polyethoxylated tallow amine (POEA). Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal. Finally, the study was conducted under field conditions in Argentina and therefore, not representative for the EU conditions.			
Toxicological Effects of Roundup® on <i>Drosophila melanogaster</i> Reproduction.	Muller Kelly; Herrera Karina Talyn Becky Melchiorre Erik	Toxics, (2021 Jul 07) Vol. 9, No. 7. Electronic Publication Date: 7 Jul 2021 Journal code: 101639637. E-ISSN: 2305-6304. L-ISSN: 2305-6304. Report No.: PMC-PMC8309847.	Non-relevant by full text	None of the formulations tested is the representative formulation for the EU glyphosate renewal. Roundup® Ready to Use is a mixture of pelargonic acid and glyphosate thus the effects observed cannot be attributable to glyphosate only and can be seen as a consequence of the mixture toxicity. Roundup® Super Concentrate contains POEA. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure, are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason, the findings in the paper cannot be related to the representative formulation, and are therefore not relevant to the regulatory risk assessment for the glyphosate EU renewal.			
The effect of glyphosate on genotoxicity in <i>Ipomoea aquatica</i>	Sudmoon, Runglawan; Thamsenunupap, Penkhae; Teanma, Jatuporn; Chaveerach, Arunrat; Kaewduangdee, Sanit; Tanee, Tawatchai	Toxicological & Environmental Chemistry, (2021) pp. Ahead of Print. CODEN: TECSDY. ISSN: 1029-0486.	Non-relevant by full text	This study investigates the effects of glyphosate on growth rate and genotoxicity of <i>Ipomoea aquatica</i> . The plants were grown in a soil collected from an organic agricultural field in Thailand which was supplemented with glyphosate at 1- to 3-fold the recommended dose. After 30 days, lengths and dry weights of the roots and shoots were found to decrease in a concentration dependent manner. The study aimed to simulate field conditions and the plants were grown in the open field with added organic fertilizers. Therefore, the publication is not dealing with EU representative uses / conditions (e.g. field locations, soil properties, non-EU monitoring etc.) and it is not relevant for the risk assessment. In addition, the concentration of glyphosate in the soil was not analyzed.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Impaired mammalian sperm function and lower phosphorylation signaling caused by the herbicide Roundup® Ultra Plus are due to its surfactant component.	Torres-Badia Mercedes; Solar-Malaga Soraya; Martin-Hidalgo David; Hurtado de Llera Ana; Gomez-Candelo Andrea; Garcia-Marin Luis J; Gonzalez-Fernandez Lauro Bragado Maria J	Theriogenology, (2021 Sep 15) Vol. 172, pp. 55-66. Electronic Publication Date: 31 May 2021 Journal code: 0421510. E-ISSN: 1879-3231. L-ISSN: 0093-691X.	Non-relevant by full text	Pig spermatozoa were incubated in Tyrode's basal medium (TBM) or Tyrode's complete medium (TCM) (1 h at 38.5 C) with several Roundup dilutions or equivalent concentrations of glyphosate or POEA. The study design, the test system and mostly the exposure route are not relevant for the European regulatory purposes regarding ecotoxicology. In addition, most of the findings are based on cellular and molecular level that cannot be related to the risk assessment. In addition, the formulation tested contains POEA (See Materials and Methods - The commercially available Roundup® Ultra Plus contains 36% (w/v) of the active ingredient glyphosate (GLY) and 6% (w/v) of the surfactant, polyoxyethylene amine (POEA).			
Study of the effects of glyphosate application on Collembola populations under controlled conditions.	Torres-Moya, F.; Dotor-Robayo, M.	Agronomia Colombiana (2020), Volume 38, Number 3, pp. 398-405, 34 refs. ISSN: 0120-9965; 2357-3732 DOI: https://doi.org/10.15446/agron.colomb.v38n3.85626 Published by: Facultad de Agronomia, Universidad Nacional de Colombia, Bogota URL (Availability): https://revistas.unal.edu.co/index.php/agrocol/article/view/85626	Non-relevant by full text	The objective of this research was to determine the effect of the application of different glyphosate doses on variation in collembolan (springtail) populations, but he study design, the test system and the mode of exposure of this study are not relevant for the European regulatory purposes. In addition, the publication does not deal with EU representative conditions (e.g. soil properties, non-EU monitoring of populations) because part of the soil used for the tests as well as all tested individuals were taken from a field location in Colombia.			
Protective role of Spirulina platensis against glyphosate induced toxicity in marine mussel Mytilus galloprovincialis	Wided, Ouarghi; Abdelhafidh, Khazri; Ali, Mezni; Touaylia, Samir	Journal of Environmental Science and Health, Part C: Toxicology and Carcinogenesis, (2021) pp. Ahead of Print. CODEN: JESHB3. ISSN: 2689-6591.	Non-relevant by full text	The findings of this study are only based on cellular and molecular level that cannot be related to the risk assessment.			
Reproductive toxicity due to herbicide exposure in freshwater organisms.	Yang Changwon Lim Whasun Song Gwonhwa	Comparative biochemistry and physiology. Toxicology & pharmacology : CBP, (2021 Oct) Vol. 248, pp. 109103. Electronic Publication Date: 12 Jun 2021 Journal code: 100959500. ISSN: 1532-0456. L-ISSN: 1532-0456.	Non-relevant by full text	This review article presents only secondary information dealing with general herbicide exposures (not glyphosate specific), where no new data is provided that can be used for risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Alleviative effects of Ginkgo biloba extract on oxidative stress, inflammatory response and immune suppression induced by long-term glyphosate exposure in tilapia (<i>Oreochromis niloticus</i>)	Zheng, Tao; Gu, Zhengyan; Xu, Pao; Yin, Guojun; Jia, Rui; Cao, Liping; Du, Jinliang; He, Qin	Aquaculture (15 Jan 2022) Volume 546, art. 737325, 62 refs. CODEN: AQCLAL ISSN: 0044-8486 DOI: 10.1016/j.aquaculture.2021.737325 Published by: Elsevier B.V.,	Non-relevant by full text	The findings of this study are only based on cellular and molecular level that cannot be related to the risk assessment.			
An integrated approach to evaluate the impacts of the herbicides glyphosate, 2,4-D and metsulfuron-methyl on soil microbial communities in the Pampas region, Argentina	Zabaloy, Maria C; Garland, Jay L; Gomez, Marisa A	Applied soil ecology (2008) , Volume 40, Number 1, pp. 1-12 ISSN: 0929-1393 Published by: [Amsterdam]; Elsevier Science Source Note: 2008 Sept., v. 40, no. 1	Non-relevant by full text	This publication is not considered relevant as the used test soils have a reported history of herbicide application. In addition, they originate from agricultural fields of the Pampas region (Argentina) and might therefore not be regarded representative for the EU/Japan.			
How glyphosate altered the behaviour of agrobiont spiders (Araneae: Lycosidae) and beetles (Coleoptera: Carabidae)	Michalkova, V; Pekar, S	Biological control : theory and application in pest management (2009) , Volume 51, Number 3, pp. 444-449 ISSN: 1049-9644 Source Note: 2009 Dec., v. 51, issue 3	Non-relevant by full text	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU/Japan glyphosate renewal. In addition, the study design, test system and exposure routes are not relevant for the EU / Japan regulatory purposes. Tested rate is not clear.			Y
Impact of chemical pesticides on survival and feeding rate of the woodlouse <i>Porcellio scaber</i> (Isopoda, Oniscidea) in Benghazi, Libya.	Bushaiba, S. S.; Mohamed, A. I.; Nair, G. A.	Jordan Journal of Applied Science (Natural Sciences) (2006) , Volume 8, Number 2, pp. 43-50, 19 refs. ISSN: 1605-2587 Published by: Deanship of Scientific Research, Applied Science University, Amman	Non-relevant by full text	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan.			
Effects of pesticides on the micro-flora of loamy soil obtained from biological garden, federal university of technology, minna, Nigeria	Abalaka, M. E.; Idakwoji, K.; Daniyan, S. Y.	Advance in Agriculture and Biology, (2015) Vol. 4, No. 3, pp. 106-113. CODEN: AABDCI. ISSN: 2310-9343.	Non-relevant by full text	Presented data cannot be related to an EU level ANNEX I risk assessment (microbial population study).			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effect of lethal and sub-lethal concentrations of glyphosate on some biochemical parameters and growth responses of African catfish (<i>Clarias gariepinus</i>).	Abdulkareem, S. I [Reprint Author]; Lawal, N. O.; Moyebi, O. D.	Egyptian Academic Journal of Biological Sciences B Zoology, (2014) Vol. 6, No. 2, pp. 47-54. http://zoology.eajbs.eg.net/archive.html . ISSN: 2090-0759. E-ISSN: 2090-0821.	Non-relevant by full text	Endpoints are not relatable to an EU level risk assessment. No information provided on the levels of exposure presented.			
Commercially formulated glyphosate can kill non-target pollinator bees under laboratory conditions.	Abraham, John [Reprint Author]; Benhotons, Grace Senami; Krampah, Isaac; Tagba, Jehoshaphat; Amissah, Carlos; Abraham, Janice Dwomoh	Entomologia Experimentalis et Applicata, (AUG 2018) Vol. 166, No. 8, pp. 695-702. http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1570-7458 . CODEN: ETEAAT. ISSN: 0013-8703. E-ISSN: 1570-7458.	Non-relevant by full text	The study was conducted using Sunphosate 360 SL, which is not the representative formulation for the EU renewal at Annex I.			Y
Susceptibility of <i>Chordodes nobilii</i> (Gordiida, Nematomorpha) to three pesticides: Influence of the water used for dilution on endpoints in an ecotoxicity bioassay.	Achiorno Cecilia L de Villalobos Cristina Ferrari Lucrecia	Environmental pollution (Barking, Essex : 1987), (2018 Nov) Vol. 242, No. Pt B, pp. 1427-1435. Electronic Publication Date: 3 Aug 2018 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	This paper describes the conduct of aquatic toxicity assays using naturally collected waters from the countries of interest. Infection rate of hosts was also assessed as an endpoint. Roundup that contains POEA was also used in the study. This surfactant is not in the representative formulation for the Annex I renewal.			Y
Gonado-hepato-somatic index of <i>Oreochromis niloticus</i> sub adults exposed to some herbicides	Ada, Fidelis Bekeh; Ayotunde, Ezekiel Olatunji	International Journal of Aquaculture. Vol. 3, no. 11, [np]. 2013. E-ISSN: 1927-5773 DOI: 10.5376/ija.2013.03.0011 Published by: Sophia Publishing Group Inc, 11393 Stevenston Hwy, PO Box 96016 Richmond, V7A 5J5, British Columbia Canada	Non-relevant by full text	Endpoints based on gonadosomatic and hepatosomatic indeces are not used in the EU level ecotoxicological risk assessment for Annex I renewal.			
The effects of benomyl and glyphosate treated plant litter on nitrogen mineralization in mollisols.	Afrifa, A. A.; Wood, M.; K. Ofori-Frimpong	West African Journal of Applied Ecology (2010), Volume 17, pp. 143-152, 16 refs. ISSN: 0855-4307 Published by: Ecological Laboratory, University of Ghana, Legon URL (Availability): http://www.wajae.org/papers/papers_vol17/13%20The%20Effect%20of%20Benmyl .	Non-relevant by full text	In this study both glyphosate and a fungicide product are applied simultaneously to tomato plants. As this assesses combined effects this study is not relevant to the renewal of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticides in the real world: The consequences of GMO-based intensive agriculture on native amphibians	Agostini, M. Gabriela; Bilenca, David; Roesler, Ignacio; Bonetto, Carlos; Ronco, Alicia E.	Biological Conservation (1 Jan 2020) Volume 241, art: 108355, 67 refs. CODEN: BICOBK ISSN: 0006-3207 DOI: 10.1016/j.biocon.2019.108355 Published by: Elsevier Ltd,	Non-relevant by full text	This paper looks at the impact of mixtures of pesticides rather than single actives. Therefore it is not relevant to the EU renewal of glyphosate at EU level			
Evaluation of plant-growth-promoting activities of rhizobacterium <i>Pseudomonas putida</i> under herbicide stress	Ahemad, Munees; Khan, Mohammad Saghir	Annals of microbiology (2012), Volume 62, Number 4, pp. 1531-1540 ISSN: 1590-4261 Published by: Springer-Verlag Source Note: 2012 Dec., v. 62, no. 4	Non-relevant by full text	Paper discusses the impact of herbicides on the PGP of soil borne bacteria in the root zone. Not relateable to an EU ecotox risk assessment.			
Genotoxicity of diuron and glyphosate in oyster spermatozoa and embryos.	Akcha F Spagnol C; Rouxel J	Aquatic toxicology (Amsterdam, Netherlands), (2012 Jan 15) Vol. 106-107, pp. 104-13. Electronic Publication Date: 3 Nov 2011 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Genotoxic screening level endpoints based on parameters not considered relevant to EU renewal level assessment.			Y
Two heteropteran predators in relation to weed management in herbicide-tolerant corn.	Albajes, Ramon [Reprint Author]; Lumbierres, Belen; Pons, Xavier	Biological Control, (OCT 2011) Vol. 59, No. 1, pp. 30-36. ISSN: 1049-9644. E-ISSN: 1090-2112.	Non-relevant by full text	This study was not conducted to a relevant guideline. The test substance was identified as MON 78044, but no other test item information is provided (e.g. purity). The results of the study cannot clearly be related to the glyphosate treatments as multiple products were applied, the work is not GLP compliant and there is insufficient analytical documentation to confirm exposure.			Y
Side-effects of pesticides on the generalist endoparasitoid <i>Palmistichus elaeisis</i> (Hymenoptera: Eulophidae).	Alcantara-de la Cruz, R.; Zanutio, J. C.; Lacerda, M. C.; Wilcken, C. F.; Fernandes, F. L.; Tavares, W. de S.; Soares, M. A.; Sedyama, C. S.; de S. Tavares, W.	Scientific Reports (2017), Volume 7, Number 1, 10064 p., 52 refs. ISSN: 2045-2322 DOI: 10.1038/s41598-017-10462-3 Published by: Nature Publishing Group, London URL (Availability): https://www.nature.com/articles/s41598-017-10462-3	Non-relevant by full text	This paper discusses the influence of trait modified crops sprayed with glyphosate on biological control agents. It is not relateable to an EU level risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effect of glyphosate herbicide on the behavior of soil arthropods in non-organic tomato system	Al-Daikh, E. B.; El-Mabrouk, A.; El Roby, A. S. M. H.	Advance in Agriculture and Biology (2016), 5(1), 14-19 CODEN: AABDCI; ISSN: 2310-9343	Non-relevant by full text	Endpoints presented cannot be related to an EU level risk assessment for Annex I renewal.			
Ecotoxicological assessment of soil microbial community tolerance to glyphosate.	Allegrini Marco Zabaloy Maria Celina Gomez Elena del V	The Science of the total environment, (2015 Nov 15) Vol. 533, pp. 60-8. Electronic Publication Date: 4 Jul 2015 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Novel test design / approach - not relatable to an EU level ecotoxicological risk assessment for Annex I renewal.			
Suppression treatment differentially influences the microbial community and the occurrence of broad host range plasmids in the rhizosphere of the model cover crop Avena sativa L	Allegrini Marco; Gomez Elena Del V Smalla Kornelia Zabaloy Maria Celina Zabaloy Maria Celina	PLoS one, (2019) Vol. 14, No. 10, pp. e0223600. Electronic Publication Date: 9 Oct 2019 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC6785065.	Non-relevant by full text	Endpoints type is not considered at the EU level risk assessment and cannot be related to levels of exposure anticipated following application according to the proposed GAP.			
Repeated glyphosate exposure induces shifts in nitrifying communities and metabolism of phenylpropanoids	Allegrini, Marco; Elena del V Gomez; MarA-a Celina Zabaloy	Soil biology & biochemistry (2017), Volume 105, pp. 206-215 ISSN: 0038-0717 Published by: Elsevier Ltd Source Note: 2017 Feb., v. 105	Non-relevant by full text	Approaches used cannot be related to an EU level ecotoxicological risk assessment for Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Organic honey supplementation reverses pesticide-induced genotoxicity by modulating DNA damage response.	Alleva Renata; Borghi Battista Manzella Nicola; Gaetani Simona; Ciarapica Veronica; Bracci Massimo; Monaco Federica; Amati Monica; Tomasetti Marco Caboni Maria Fiorenza; Pasini Federica	Molecular nutrition & food research, (20161000) Vol. 60, No. 10, pp. 2243-2255. Electronic Publication Date: 30 May 2016 Journal code: 101231818. E-ISSN: 1613-4133. L-ISSN: 1613-4125.	Non-relevant by full text	Not related directly to the effects of glyphosate, but to the impact of polyphenols extracted from honey on human epithelial cells. Not relevant to EU level ecotoxicological risk assessment.			
EFFECTS OF CONTAMINATED WATER WITH GLYPHOSATE HERBICIDES ON THE EXTERNAL AND BEHAVIORAL CHARACTERISTICS OF COMMON CARP, CYPRINUS CARPIO LINNAEUS.	Al-Sultany, Dhurgham A. A. [Reprint Author]; Al-Khafaji, Firas M.; Khlaif, Abbas T.	Biochemical and Cellular Archives, (APR 2019) Vol. 19, No. 1, pp. 1475-1480. ISSN: 0972-5075. E-ISSN: 0976-1772.	Non-relevant by full text	Methodology presented cannot be related to the results provided. Exposure rates cannot be related to the EU level assessment. No glyphosate formulation / product details presented.			
The usefulness of mesocosms for ecotoxicity testing with lacertid lizards.	Amaral, Maria Jose [Reprint Author]; Bicho, Rita C.; Carretero, Miguel A.; Sanchez-Hernandez, Juan C.; Faustino, Augusto M. R.; Soares, Amadeu M. V. M.; Mann, Reinier M.	Acta Herpetologica, (2012) Vol. 7, No. 2, pp. 263-280. http://ejournal.unifi.it/index.php/ah . ISSN: 1827-9635. E-ISSN: 1827-9643.	Non-relevant by full text	Long term monitoring study on lizards maintained in outdoor mesocosms exposed to multiple pesticides. Endpoints cannot be related to an EU level ecotoxicological risk assessment for ANNEX I renewal of glyphosate.			
Additive effects of the herbicide glyphosate and elevated temperature on the branched coral Acropora formosa in Nha Trang, Vietnam.	Amid C; Olstedt M; Gunnarsson J S; Hellstrom M; Tedengren M Le Lan H; Tran Thi Minh H Van den Brink P J Van den Brink P J	Environmental science and pollution research international, (2018 May) Vol. 25, No. 14, pp. 13360-13372. Electronic Publication Date: 22 Jan 2017 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344. Report No.: PMC-PMC5978828.	Non-relevant by full text	The paper discusses the combined impact of multiple stressors on coral bleaching, when exposed to a formulation that is not the representative formulation for the Annex I renewal. The study compares effects of the product on bleaching of corals at two different temperatures.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Use of transgenic GFP reporter strains of the nematode <i>Caenorhabditis elegans</i> to investigate the patterns of stress responses induced by pesticides and by organic extracts from agricultural soils.	Anbalagan Charumathi; Lafayette Ivan; Antoniou-Kourounioti Melissa; Gutierrez Carmen; Martin Jose Rodriguez; Chowdhuri Debapratim K; De Pomerai David I	Ecotoxicology (London, England), (2013 Jan) Vol. 22, No. 1, pp. 72-85. Electronic Publication Date: 19 Oct 2012 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	Study provides information on cellular / molecular level and is not ecotoxicologically relevant study			Y
Heavy metal, pesticides and fuels: effect in the population of collembola in the soil. Original Title: Metais pesados, agrototoxicos e combustiveis: efeito na populacao de colembolos no solo.	Antoniolli, Zaida Ines [Reprint Author]; Redin, Marciel; de Souza, Eduardo Lorensi; Pocijeski, Elisandra	Ciencia Rural, (JUN 2013) Vol. 43, No. 6, pp. 992-998. http://www.ufsm.br/ccr/revista/ . ISSN: 0103-8478. E-ISSN: 1678-4596.	Non-relevant by full text	Concerns exposure to a glyphosate formulation (not the representative formulation) in the presence of metals, and in mixtures. It is not relevant to an EU level risk assessment.			
Structural effects of the bioavailable fraction of pesticides in soil: suitability of elutriate testing.	Antunes Sara C; Pereira Joana L; Cachada Anabela; Duarte Armando C; Goncalves Fernando; Sousa Jose P; Pereira Ruth	Journal of hazardous materials, (2010 Dec 15) Vol. 184, No. 1-3, pp. 215-25. Electronic Publication Date: 14 Aug 2010 Journal code: 9422688. E-ISSN: 1873-3336. L-ISSN: 0304-3894.	Non-relevant by full text	The endpoint cannot be ascertained for glyphosate alone as other active substances are also used in the field study. The glyphosate product used (Montana) is not a representative product.			
Changes in ultrastructure and expression of steroidogenic factor-1 in ovaries of zebrafish <i>Danio rerio</i> exposed to glyphosate.	Armiliato Neide; Ammar Dib; Nezzi Luciane; Stralioetto Marcos; Muller Yara M R; Nazari Evelise M	Journal of toxicology and environmental health. Part A, (2014) Vol. 77, No. 7, pp. 405-14. Journal code: 100960995. ISSN: 1528-7394. L-ISSN: 0098-4108.	Non-relevant by full text	Endpoint cannot be related to an EU level risk assessment.			Y
Organophosphorus pesticides induced enzymological responses in the various tissues of freshwater fish Koi carp (<i>Cyprinus carpio</i>)	Asgari, S. M.; Kumar, M. S. Arun; Ali, A. Jawahar; Musthafa, M. Saiyad	European Journal of Zoological Research, (2018) Vol. 6, No. 1, pp. 17-24. CODEN: EJZRAD. ISSN: 2278-7356.	Non-relevant by full text	This study described the Biological impacts on enzyme levels in fish blood, are not used in an EU level ecotoxicological risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of glyphosate on egg incubation, larvae hatching, and ovarian rematuration in the estuarine crab <i>Neohelice granulata</i>	Avigliano, Luciana; Alvarez, Natalia; Mac Loughlin, Camila; Rodriguez, Enrique Marcelo	Environmental Toxicology and Chemistry [Environ. Toxicol. Chem.]. Vol. 33, no. 8, 1879 p. Aug 2014. ISSN: 0730-7268 E-ISSN: 1552-8618 Published by: Wiley-Blackwell, Commerce Pl, 350 Main St Maiden MA 02148 United States	Non-relevant by full text	Article discusses effects of formulated product on crab development. Endpoints are not relatable to an EU level risk assessment as specific endpoints are not discussed.			Y
Effects of Glyphosate on Somatic and Ovarian Growth in the Estuarine Crab <i>Neohelice granulata</i> , During the Pre-Reproductive Period	Avigliano, Luciana; Ivana S Canosa; Daniel A Medesani; Enrique M Rodriguez	Water, air, and soil pollution (2018), Volume 229, Number 2, 44 p. ISSN: 0049-6979 Published by: Springer International Publishing Source Note: 2018 Feb., v. 229, no. 2	Non-relevant by full text	Difficult to relate findings of the study to an EU level ecotoxicology risk assessment as they are based on GSI and HIS values and the different types of oocyte found in the ovaries between exposure groups.			Y
Toxicity of sublethal concentrations of glyphosate and paraquat herbicide in the African catfish (<i>Clarias gariepinus</i>)	Ayanda, Isaac O.; Olasehinde, Grace L.; Ajayi, Adesola A.	International Journal of Agriculture and Biology, (2018) Vol. 20, No. 6, pp. 1359-1364. CODEN: IJABAK. ISSN: 1560-8530.	Non-relevant by full text	Observations based on enzyme levels are not used in EU level ecotoxicological risk assessment for Annex I renewal purposes.			
Mortality, teratogenicity and growth inhibition of three glyphosate formulations using Frog Embryo Teratogenesis Assay-Xenopus.	Babalola O Oluwaseun; Truter J Christoff; van Wyk Johannes H	Journal of applied toxicology : JAT, (2019 Jun 05) . Electronic Publication Date: 5 Jun 2019 Journal code: 8109495. E-ISSN: 1099-1263. L-ISSN: 0260-437X.	Non-relevant by full text	This paper uses a formulation that is not the representative formulation for the annex I renewal. Study endpoints cannot be related to the EU level risk assessment as the techniques used are not recognised at the EU level.			
Effects of glyphosate and its commercial formulation, Roundup (R) Ultramax, on liver histology of tadpoles of the neotropical frog, <i>Leptodactylus latrans</i> (amphibia: Anura).	Bach, Nadia C.; Marino, Damian J. G.; Natale, Guillermo S.; Somoza, Gustavo M. [Reprint Author]	Chemosphere, (JUL 2018) Vol. 202, pp. 289-297. CODEN: CSMHAF. ISSN: 0045-6535. E-ISSN: 1879-1298.	Non-relevant by full text	Study conducted using a formulation that is not the representative formulation for the Annex I renewal. Roundup Ultramax is based on MON 78294, which contains a different surfactant system compared to the representative formulation (MON 52276) and therefore the effects of the surfactant cannot be excluded.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Non-target effects of a glyphosate-based herbicide on Common toad larvae (<i>Bufo bufo</i> , Amphibia) and associated algae are altered by temperature.	Baier Fabian; Gruber Edith; Zaller Johann G Hein Thomas; Bondar-Kunze Elisabeth Ivankovic Marina Mentler Axel Bruhl Carsten A Spangl Bernhard	PeerJ, (2016) Vol. 4, pp. e2641. Electronic Publication Date: 1 Nov 2016 Journal code: 101603425. ISSN: 2167-8359. Report No.: PMC-PMC5101619.	Non-relevant by full text	Test item used is not the representative formulation relevant to the EU renewal of glyphosate. The article discusses the impact of temperature on toxicity. Studies conducted for EU renewal are standardly conducted at a constant temperature that reflects median temperature in the field. Variable temperature studies are not considered at EU level.			
Temperature-Dependence of Glyphosate-Based Herbicide's Effects on Egg and Tadpole Growth of Common Toads	Baier, Fabian; Jedinger, Mathias; Gruber, Edith; Zaller, Johann G	Frontiers in Environmental Science. Vol. 4, 51 p. 2016. E-ISSN: 2296-665X DOI: 10.3389/fenvs.2016.00051 Published by: Frontiers Research Foundation, P O Box 110 1015 Lausanne Switzerland	Non-relevant by full text	The study was conducted using Roundup, which contains POEA and the influence of POEA on the achieved results cannot be excluded. The representative formulation for the Annex I renewal does not contain POEA, therefore the findings are not relevant to the renewal risk assessment.			Y
The direct and indirect effects of a glyphosate-based herbicide and nutrients on Chironomidae (Diptera) emerging from small wetlands.	Baker Leanne F Mudge Joseph F; Houlahan Jeff E; Thompson Dean G; Kidd Karen A	Environmental toxicology and chemistry, (2014 Sep) Vol. 33, No. 9, pp. 2076-85. Electronic Publication Date: 7 Aug 2014 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	The formulation used in the article is not relevant to the Annex I renewal, as this has a different surfactant system.			
Acute exposure to chlorpyrifos and glyphosate induces changes in hemolymph biochemical parameters in the crayfish, <i>Astacus leptodactylus</i> (Eschscholtz, 1823).	Banaee Mahdi Akhlaghi Mostafa; Soltanian Siyavash; Gholamhosseini Amin; Heidarieh Hassan; Fereidouni Mohammad Saeed	Comparative biochemistry and physiology. Toxicology & pharmacology : CBP, (2019 Aug) Vol. 222, pp. 145-155. Electronic Publication Date: 2 May 2019 Journal code: 100959500. ISSN: 1532-0456. L-ISSN: 1532-0456.	Non-relevant by full text	Endpoints based on biochemical parameters are not relatable to an EU level ecotoxicological risk assessment for Annex I renewal.			Y
Effect of glyphosate-based herbicide, Roundup super(TM) on territory deference of male <i>Oreochromis mossambicus</i> (Osteichthyes, Cichlidae) associated with mating behaviour	Bandara, KVSNI; Amarasinghe, US	Sri Lanka journal of aquatic sciences [Sri Lanka J. Aquat. Sci.]. Vol. 20, no. 1, pp. 1-10. 2015. ISSN: 1391-2038 URL (Document): http://www.slafar.lk/images/pdf/vol20/vol20.1-10.pdf	Non-relevant by full text	Formulation tested contains POEA - not relevant to an EU level Annex I ecotoxicological risk assessment for renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effect of herbicide Roundup on carp spawn viability and possibility for prevention of its toxicity by probiotic preparation BPS-44	Barbukho, O. V.; Zhidenko, A. O.	Gidrobiologicheskii Zhurnal, (2011) Vol. 47, No. 3, pp. 74-79. CODEN: GBZUAM. ISSN: 0375-8990.	Non-relevant by full text	Roundup used, high concentrations used, eggs exposed to probiotic and roundup, not relevant to the renewal of glyphosate			
Toxic effects of glyphosate on common carp (<i>Cyprinus carpio</i> L.) fingerlings.	Bawa, V.; Kondal, J. K.; Singh, R.	Agricultural Research Journal (2018), Volume 55, Number 1, pp. 169-171, 25 refs. ISSN: 2395-1435 DOI: 10.5958/2395-146x.2018.00032.7 Published by: Punjab Agricultural University, Ludhiana URL (Availability): http://web.pau.edu/arj/index.php?arj_id=1	Non-relevant by full text	The formulation used has a surfactant system that is based on POEA, which is not relevant to the EU representative formulation for the annex I renewal.			
Contact with a glyphosate-based herbicide has long-term effects on the activity and foraging of an agrobiont wolf spider.	Behrend Julia E Rypstra Ann L	Chemosphere, (2018 Mar) Vol. 194, pp. 714-721. Electronic Publication Date: 7 Dec 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Study used MON 8709 Buccaneer Plus formulation which contains MON 0818 (based on POEA) and is not used in the representative EU formulation. Therefore findings cannot be related to the risk assessment.			Y
How does changing pesticide usage over time affect migrating amphibians: a case study on the use of glyphosate-based herbicides in German agriculture over 20 years.	Berger, G.; Graef, F.; Pallut, B.; Hoffmann, J.; Bruehl, C. A.; Wagner, N.	Frontiers in Environmental Science (2018), Volume 6, Number February, 6 p., many ref. ISSN: 2296-665X DOI: 10.3389/fenvs.2018.00006 Published by: Frontiers Media S.A., Lausanne URL (Availability): https://www.frontiersin.org/articles/10.3389/fenvs.2018.0	Non-relevant by full text	This paper considers information from multiple sources to assess the impact of herbicides on amphibian populations in Germany over the last 20 years. This is country specific information that cannot be related to an EU level ecotoxicological risk assessment for EU Annex I renewal.			
Seasonal variations in the dose-response relationship of acetylcholinesterase activity in freshwater fish exposed to chlorpyrifos and glyphosate.	Bernal-Rey Daissy L; Cantera Cecilia G; Dos Santos Afonso Maria Menendez-Helman Renata J	Ecotoxicology and environmental safety, (2020 Jan 15) Vol. 187, pp. 109673. Electronic Publication Date: 4 Nov 2019 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	No specific endpoints that are useable in an EU level ecotoxicological risk assessment for Annex I renewal are presented in the paper. It is difficult to relate the observed effects to fish species found in the EU, as these data were collected from wild caught fish collected over a period of time. Impacts for example, of pH on the levels of stress in the system were not considered and may have ultimately contributed to the observed effects.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of Glyphosate and Roundup on the brine shrimp <i>Artemia franciscana</i>	Berthelemy, N. J.	INTEGRATIVE AND COMPARATIVE BIOLOGY, (MAR 2018) Vol. 58, Supp. [1], pp. E277-E277. MA P1-187. ISSN: 1540-7063.	Non-relevant by full text	This paper is a poster abstract. There is no associated paper. There is insufficient information presented in the poster abstract to establish relevance of the poster to the Annex I renewal.			
Individual and combined effect of indoxacarb and glyphosate on biochemical alterations in Japanese quails (<i>Coturnix Coturnix Japonica</i>)	Bhojane, N. M.; Ingole, R. S.; Hajare, S. W.; Kuralkar, S. V.; Waghmare, S. P.; Rathod, P. R.; Manwar, S. J.; Khodke, M. V.	Chemical Science Review and Letters (2018), 7(25), 190-200 CODEN: CSRLBV; ISSN: 2278-6783 URL: http://chesci.com/wp-content/uploads/2018/04/V7i25_29_CS152049012_Nagnath_190-200.pdf	Non-relevant by full text	Cellular level parameters are discussed in this paper, with endpoints that are not relevant to an Annex I renewal from an ecotoxicological perspective.			
Comparative study of chronic toxicity of herbicides used in South America using a model of <i>Cyprinus carpio</i>	Blasco, Pedreros M. P.; Alvarez, M. A.; Devia, C. M.; Enriz, R. D.; Giannini, F. A.	Environmental Science: An Indian Journal, (2018) Vol. 14, No. 5, pp. 175. CODEN: ESRIBA. ISSN: 0974-7451.	Non-relevant by full text	Formulation used is not the representative formulation for the Annex I renewal.			
Acetylcholinesterase in honey bees (<i>Apis mellifera</i>) exposed to neonicotinoids, atrazine and glyphosate: laboratory and field experiments.	Boily Monique Sarrasin Benoit; Deblois Christian; Aras Philippe Chagnon Madeleine	Environmental science and pollution research international, (2013 Aug) Vol. 20, No. 8, pp. 5603-14. Electronic Publication Date: 27 Feb 2013 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	The test item is the commercial formulation Weathermax 240 which is distributed in Canada. This formulation is not the representative formulation for the Annex I renewal in the EU. In addition, the study does not follow any approved guideline and the investigated effect on acetylcholinesterase cannot be related to the EU level bee ecotoxicological risk assessment for Annex I renewal purposes. The field experiment, conducted in two regions in Québec (Canada) was not conducted under controlled conditions. No analytical verification of glyphosate was provided. Also, the experimental design is only briefly described, with no rationale presented for the selection of exposure concentrations.			Y
Chronic exposure to a glyphosate-based herbicide makes toad larvae more toxic.	Bokony Veronika; Miko Zsanett; Hettyey Attila Moricz Agnes M; Kruzelyi Daniel	Proceedings. Biological sciences, (2017 Jul 12) Vol. 284, No. 1858. Journal code: 101245157. E-ISSN: 1471-2954. L-ISSN: 0962-8452. Report No.: PMC-PMC5524492.	Non-relevant by full text	The article does not report results which can be used for a risk assessment and information is insufficient to transfer values into such determinants.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
A glyphosate micro-emulsion formulation displays teratogenicity in <i>Xenopus laevis</i> .	Bonfanti Patrizia Saibene M; Mantecchia P; Colombo A Bacchetta R	Aquatic toxicology (Amsterdam, Netherlands), (2018 Feb) Vol. 195, pp. 103-113. Electronic Publication Date: 24 Dec 2017 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Formulation is not relevant to the EU level renewal of glyphosate.			Y
Light history modulates antioxidant and photosynthetic responses of biofilms to both natural (light) and chemical (herbicides) stressors.	Bonnineau Chloe Sague Irene Gallardo; Urrea Gemma; Guasch Helena	Ecotoxicology (London, England), (2012 May) Vol. 21, No. 4, pp. 1208-24. Electronic Publication Date: 11 Mar 2012 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	Endpoints / findings not relatable to an EU level ecotoxicological risk assessment for Annex I renewal.			Y
EFFECTS OF DIFFERENT TYPES OF WEED CONTROL ON THE ANT FAUNA IN <i>Eucalyptus grandis</i> . Original Title: EFEITOS DE DIFERENTES TIPOS DE CONTROLE DE PLANTAS INFESTANTES SOBRE A MIRMECOFAUNA EM <i>Eucalyptus grandis</i> .	Boscardin, Jardel [Reprint Author]; Costa, Ervandil Correa [Reprint Author]; Garlet, Juliana [Reprint Author]; Machado, Leonardo Mortari [Reprint Author]; Machado, Dayanna do Nascimento [Reprint Author]; Pedron, Leandra [Reprint Author]; Bolzan, Lisandro	Ciencia Florestal, (JAN-MAR 2016) Vol. 26, No. 1, pp. 21-34. ISSN: 0103-9954. E-ISSN: 1980-5098.	Non-relevant by full text	Specific endpoints that could be used in an EU level risk assessment were not presented.			
Relationship between ant communities and environmental quality in <i>Eucalyptus grandis</i> submitted to different weedy species control in the south of Brazil. Original Title: Relacao entre guildas de formigas e a qualidade ambiental em <i>Eucalyptus grandis</i> subme	Boscardin, Jardel [Reprint Author]; Costa, Ervandil Correa; Charles Delabie, Jacques Hubert	ENTOMOTROPICA, (2014) Vol. 29, No. 3, pp. 173-182. http://www.entomotropica.org/index.php/entomotropica/issue/view/141 . ISSN: 1317-5262.	Non-relevant by full text	Presented data is not relatable to an EU level risk assessment for EU Annex I level renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Assessment of mortality and reproduction of <i>Daphnia magna</i> subjected to the herbicide glyphosate. Avaliacao da mortalidade e reproducao de <i>Daphnia magna</i> submetida ao herbicida glifosato.	Boufleuer, E. M. S.; Rocker, C.; Daleste, R.; Sebastien, N. Y.; Petrikoski, S. M.	Acta Iguazu (2016), Volume 5, Number 5, pp. 25-33, 13 refs. ISSN: 2316-4093 Published by: Universidade Estadual do Oeste do Parana, Cascavel Conference: I Seminario de Engenharia de Energia na Agricultura, Campus Cascavel, Brasil, 23 de novembro de 2016.	Non-relevant by full text	Results of a 48 hour <i>Daphnia magna</i> tests treated with glyphosate determined an LC50 of 2.1087 mg/L. A chronic (21 day) study determined effects at 2.1087 mg/L, but no effects were observed at the lower concentrations tested. The study was not conducted to GLP or to an acceptable guideline and there are several short comings in the provided report. The test substance used (Polaris 48%) is a Monsanto Brazil product that is based on the IPA salt of Glyphosate. This product also contains a surfactant that is not relevant to the representative formulation, therefore the observed findings are not considered relevant to the renewal. Furthermore the influence of the co-formulant on the results cannot be excluded. There are no analytical data reported and so the exposure cannot be confirmed.			
Measuring variability in phytotoxicity testing using crop and wild plant species.	Boutin Celine White Andrea L; Carpenter David	Environmental toxicology and chemistry, (2010 Feb) Vol. 29, No. 2, pp. 327-37. Journal code: 8308958. ISSN: 0730-7268. L-ISSN: 0730-7268.	Non-relevant by full text	GLY product + surfactant (Agral 90) used in the study which compared this with atrazine product to look at the phytotoxicity of plant species. Treatments ranged from were 21 to 2277 g ai/ha for GLY product, in the greenhouse. Although IC25 could be obtained from the article, the results indicate great variability between the plant species tested and external factors. Therefore, it is not possible to extrapolate this data for use in the regulatory RA of GLY renewal.			Y
Effects of sub-lethal doses of herbicides on the competitive interactions between two non-target plants: <i>Centaurea cyanus</i> L. and <i>Silene noctiflora</i> L.	Boutin Celine; Montroy Kaitlyn; Carpenter David J Mathiassen Solvejg K Strandberg Beate; Damgaard Christian	Environmental toxicology and chemistry, (2019 May 30) . Electronic Publication Date: 30 May 2019 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Observation not linked to glyphosate or its metabolites. In this case the observations were concerning competition in the growth of plants under different pesticide stress regimes and at different planting densities. Endpoints considered relevant for EU level risk assessment were not presented.			
Herbicide impact on non-target plant reproduction: What are the toxicological and ecological implications?	Boutin, C. (Reprint) Boutin, C. (Reprint); Carpenter, D.; Thomas, P. J. Strandberg, B. Mathiassen, S. K.	ENVIRONMENTAL POLLUTION, (FEB 2014) Vol. 185, pp. 295-306. ISSN: 0269-7491.	Non-relevant by full text	This paper describes the results of a set of long term monitoring studies that were used to investigate the impact of a range of herbicides on the reproductive output of plants. Whilst these data are interesting in developing the testing paradigm for plants, the data presented cannot be related to an EU level risk assessment for Annex I renewal.			
Glyphosate and Roundup® alter morphology and behavior in zebrafish.	Bridi Daiane Altenhofen Stefani; Gonzalez Jonas Brum; Reolon Gustavo Kellermann Bonan Carla Denise	Toxicology, (20171201) Vol. 392, pp. 32-39. Electronic Publication Date: 12 Oct 2017 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Non-relevant by full text	The article does not report results, which can be used for risk assessment and information is insufficient to transfer values into such determinants.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Foliar Roundup application has minor effects on the compositional and functional diversity of soil microorganisms in a short-term greenhouse experiment.	Bruckner Alexander Schmerbauch Alina; Heigl Florian; Zaller Johann Ruess Liliane	Ecotoxicology and environmental safety, (2019 Jun 15) Vol. 174, pp. 506-513. Electronic Publication Date: 9 Mar 2019 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Formulation used is not the representative formulation for the Annex I renewal.			
Toxicity of three pesticides commonly used in Brazil to <i>Pontosclex corethrurus</i> (Mueller, 1857) and <i>Eisenia andrei</i> (Bouche, 1972)	Buch, Andressa Cristhy; Brown, George Gardner; Niva, Cintia Carla; Sautter, Klaus Dieter; Sousa, Jose Paulo	Applied soil ecology (2013), Volume 69, pp. 32-38 ISSN: 0929-1393 Published by: Elsevier B.V. Source Note: 2013 July, v. 69	Non-relevant by full text	The formulation used is not the representative formulation for the Annex I.			Y
Effects of pesticide mixtures on host-pathogen dynamics of the amphibian chytrid fungus	Buck, Julia C.; Hua, Jessica; Brogan, William R., III; Dang, Trang D.; Urbina, Jenny; Bendis, Randall J.; Stoler, Aaron B.; Blaustein, Andrew R.; Relyea, Rick A.	PLoS One, (2015) Vol. 10, No. 7, pp. e0132832/1-e0132832/17. CODEN: POLNCL. ISSN: 1932-6203.	Non-relevant by full text	Effects on host pathogen dynamics is not a data requirement for the Annex I submission, Therefore, the findings cannot be related to the ecotoxicological risk assessment.			
Oxidative damage and antioxidant defense in <i>Caiman latirostris</i> (Broad-snouted caiman) exposed in ovo to pesticide formulations.	Burella P M; Odetti L M Simoniello M F Poletta G L	Ecotoxicology and environmental safety, (20181000) Vol. 161, pp. 437-443. Electronic Publication Date: 13 Jun 2018 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Formulation used is not the representative formulation for the Annex I renewal.			Y
Ovarian growth impairment after chronic exposure to Roundup Ultramax® in the estuarine crab <i>Neohelice granulata</i> .	Canosa Ivana S; Silveyra Gabriela R; Avigliano Luciana; Medesani Daniel A; Rodriguez Enrique M	Environmental science and pollution research international, (2018 Jan) Vol. 25, No. 2, pp. 1568-1575. Electronic Publication Date: 2 Nov 2017 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Roundup Ultramax is the formulation used which contains 600 g/L a.e. This is however, not the representative formulation for the renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Imbalances in the male reproductive function of the estuarine crab <i>Neohelice granulata</i> , caused by glyphosate.	Canosa Ivana S; Zanitti Marina; Lonne Noelia; Medesani Daniel A Lopez Greco Laura S Rodriguez Enrique M	Ecotoxicology and environmental safety, (2019 Jul 02) Vol. 182, pp. 109405. Electronic Publication Date: 2 Jul 2019 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	The test substance is a 400 g a.i./L formulation that is not the representative formulation for the Annex I renewal.			Y
Pesticide selectivity for the insect egg parasitoid <i>Telenomus remus</i>	Carmo E. L., Bueno A.F.; Bueno R.C.O.F.	BioControl (2010), Volume 55, Number 4, pp. 455-464 ISSN: 1386-6141 Published by: Dordrecht : Springer Netherlands Source Note: 2010 Aug., v. 55, no. 4	Non-relevant by full text	An IOBC guideline criteria was used for classification of three different glyphosate products used as test substances alongside several other insecticides and herbicides in this comparison lab study. Endpoints generated are not relevant to the renewal of glyphosate.			Y
The effect of two glyphosate formulations on a small, diurnal lizard (<i>Oligosoma polychroma</i>).	Carpenter Joanna K; Nelson Nicola Carpenter Joanna K Monks Joanne M	Ecotoxicology (London, England), (2016 Apr) Vol. 25, No. 3, pp. 548-54. Electronic Publication Date: 2 Feb 2016 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	Contains POEA surfactant, therefore is not relevant to EU renewal.			Y
Influence of the pesticides glyphosate, chlorpyrifos and atrazine on growth parameters of nonochratoxigenic <i>Aspergillus</i> section <i>Nigri</i> strains isolated from agricultural soils.	Carranza Cecilia S Barberis Carla L; Chiacchiera Stella M; Magnoli Carina E	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2014) Vol. 49, No. 10, pp. 747-55. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	Comparative growth rates of <i>Aspergillus niger</i> following application of different pesticides. Endpoints are not relatable to an EU level Annex I ecotoxicological risk assessment.			Y
The impact of glyphosate herbicides on soil microbial activity from the Carajas National Forest.	Castilho, A. F.; Viana, R. G.; Santos, R. T. da S.; Costa, Y. K. S. da; Oliveira, M. F.; Pereira, K. D.; da S. Santos, R. T.; da Costa, Y. K. S.	Revista de Ciencias Agrarias / Amazonian Journal of Agricultural and Environmental Sciences (2016), Volume 59, Number 3, pp. 302-309 ISSN: 1517-591X DOI: 10.4322/rca.59312 Published by: Ministerio da Educacao, Universidade Federal Rural da Amazonia, Belem	Non-relevant by full text	A long term monitoring study using multiple Roundup formulations was performed. Roundup original contains POEA as a surfactant and is not therefore relevant. The other Roundup formulations differ in their composition to the representative formulation for the Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The combined effects of UV-B radiation and herbicides on photosynthesis, antioxidant enzymes and DNA damage in two bloom-forming cyanobacteria.	Chen Lanzhou Xie Mu; Bi Yonghong; Wang Gaozhong; Deng Songqiang; Liu Yongding	Ecotoxicology and environmental safety, (2012 Jun) Vol. 80, pp. 224-30. Electronic Publication Date: 29 Mar 2012 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Paper discusses the effect of glyphosate at different UV-B levels. Direct effects are not discussed. Not relatable to EU level risk assessment.	Y	Y	Y
Rapid effects of diverse toxic water pollutants on chlorophyll a fluorescence: variable responses among freshwater microalgae.	Choi Chang Jae Berges John A; Young Erica B	Water research, (2012 May 15) Vol. 46, No. 8, pp. 2615-26. Electronic Publication Date: 24 Feb 2012 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Non-relevant by full text	This article looks at effects of glyphosate + other compounds on the PSII system, determining effects to Chlorophyll A levels using fluorescence. Endpoints were generated using a novel approach that is not considered relevant to an EU level ecotoxicological risk assessment.			Y
Glyphosate-based herbicides toxicity on life history parameters of zoophytophagous Podisus nigrispinus (Heteroptera: Pentatomidae)	Cola Zanoncio, Jose; Mabio Chrisley Lacerda; Ricardo Alcantara-de la Cruz; Bruno Pandelo Bruegger; Alexandre Igor Azevedo Pereira; Carlos Frederico Wilcken	Ecotoxicology and environmental safety (2017) ISSN: 0147-6513 Published by: Elsevier Inc. Source Note: 2017,	Non-relevant by full text	Based on an exposure situation where soldier bugs are exposed on glyphosate resistant crops, which are not relevant to the EU exposure situation.			Y
Growth inhibition test of glyphosate herbicide for glyphosate-degrading-bacteria screening	Condrosari, Probo; Komarya, Aten; Hariyadi, Hari Rom; Hindersah, Reginawanti	International Journal of ChemTech Research, (2018) Vol. 11, No. 5, pp. 240-248. CODEN: IJCRGG. ISSN: 0974-4290.	Non-relevant by full text	The paper describes a screening test for establishing bacterial populations as tools for remediation of soils. The presented endpoints are not relatable to an EU level risk assessment from an ecotoxicological perspective.			
Measuring the impacts of Roundup Original® on fluctuating asymmetry and mortality in a Neotropical tadpole	Costa, Renan Nunes; Nomura, Fausto	Hydrobiologia (2016), Volume 765, Number 1, pp. 85-96 ISSN: 0018-8158 Published by: Springer International Publishing Source Note: 2016 Feb., v. 765, no. 1	Non-relevant by full text	Formulation tested contains POEA which is not relevant in the EU, as the representative formulation does not contain POEA.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Clone- and age-dependent toxicity of a glyphosate commercial formulation and its active ingredient in <i>Daphnia magna</i> .	Cuhra Marek Traavik Terje; Bohn Thomas	Ecotoxicology (London, England), (2013 Mar) Vol. 22, No. 2, pp. 251-62. Electronic Publication Date: 6 Dec 2012 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292. Report No.: NLM-PMC3572389; PMC-PMC3572389.	Non-relevant by full text	Study was performed according to methods adapted from the ISO, US EPA and the OECD Testing. Juveniles > 24 hour old are not the approach advised in any of the test guidelines, so the acute results for the aged cohort studies cannot be related to an EU level risk assessment. Concerning the chronic exposure assay, this approach was modified from the guidelines stated above, extending beyond the 21 day duration of the guideline test. Validity criteria for the acute and chronic test were not stated. Details of the methods used to prepare the test media are not reported. Biological data are not reported for all age groups, so the data presented in the plots cannot be confirmed. The test organisms used in the tests were from different natural sources and poorly characterised as it would be needed to draw a regulatory relevant conclusion from the reported results. Furthermore and more critically, analytical dose confirmation of media in the vessels was not performed, so exposure cannot be confirmed. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
Toxicity of Cuspidate 480SL® spray mixture formulation of glyphosate to aquatic organisms.	Currie Zachary Prosser Ryan S; Rodriguez-Gil Jose Luis; Mahon Kim; Poirier Dave; Solomon Keith R	Environmental toxicology and chemistry, (2015 May) Vol. 34, No. 5, pp. 1178-84. Electronic Publication Date: 7 Apr 2015 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	The main focus of the article was a hazard assessment of two glyphosate formulations not available in Europe and the associated co-formulants. The study, measured toxicity values and calculated exposure values for South America. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
Glyphosate- and Fipronil-Based Agrochemicals and Their Mixtures Change Zebrafish Behavior.	da Costa Chaulet Fabele; Pompermaier Aline; Fagundes Michele; Barcellos Leonardo Jose Gil de Alcantara Barcellos Heloisa Helena; Barcellos Leonardo Jose Gil de Alcantara Barcellos Heloisa Helena; Barcellos Leonardo Jose Gil Fior Debora; Koakoski Gessi; B	Archives of environmental contamination and toxicology, (2019 Jun 12) . Electronic Publication Date: 12 Jun 2019 Journal code: 0357245. E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Non-relevant by full text	This paper describes behavioural differences in zebra fish when exposed to either glyphosate or fipronil. No endpoint data presented could be used in an EU level for Annex I ecotoxicological risk assessment. Aversion / avoidance testing is not an EU level ecotoxicology risk assessment data requirement.			Y
Fish Aversion and Attraction to Selected Agrichemicals.	da Rosa Joao Gabriel Santos; de Abreu Murilo Sander; Giacomini Ana Cristina Varrone; Koakoski Gessi; Kalichak Fabiana Oliveira Thiago Acosta; de Alcantara Barcellos Heloisa Helena; Barcellos Leonardo Jose Gil Giacomini Ana Cristina Varrone; de Alcantara	Archives of environmental contamination and toxicology, (2016 Oct) Vol. 71, No. 3, pp. 415-22. Electronic Publication Date: 16 Jul 2016 Journal code: 0357245. E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Non-relevant by full text	Paper describes a novel fish avoidance study which is not considered relevant to an EU level risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Gene expression, genotoxicity, and physiological responses in an Amazonian fish, <i>Colossoma macropomum</i> (CUVIER 1818), exposed to Roundup and subsequent acute hypoxia	da Silva, Grazyelle Sebreński; de Matos, Lorena Vieira; Freitas, Juliana Oliveira da Silva; de Campos, Derek Felipe; de Almeida e Val, Vera Maria Fonseca	Comparative Biochemistry and Physiology, Part C: Toxicology & Pharmacology, (2019) Vol. 222, pp. 49-58. CODEN: CBPPFK. ISSN: 1532-0456.	Non-relevant by full text	The formulation used is based on MON 2139, which contains POEA. POEA surfactants are not present in the representative formulation (MON 52276) being used for the Annex I renewal.			Y
Comparison of the effects of glyphosate and atrazine herbicides on nontarget plants grown singly and in microcosms.	Dalton Rebecca L Boutin Celine	Environmental toxicology and chemistry, (2010 Oct) Vol. 29, No. 10, pp. 2304-15. Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Study to look at the effects of Glyphosate (Roundup original + surfactant, 356 g/L) on single potted plant species compared with a microcosm. Based on relevant guidelines, six doses up to 2136 g ai/ha label rate. IC25s generated to compare test systems but not possible to extrapolate to the Reg RA of GLY renewal. Additionally, due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			
Ecotoxicological assessment of glyphosate-based herbicides: Effects on different organisms.	de Brito Rodrigues Lais; Brito Lara Barroso; Valadares Marize Campos; de Oliveira Gisele Augusto Rodrigues de Oliveira Rhaul; Moura Diego Sousa; Grisolia Cesar Koppe Abe Flavia Renata; de Oliveira Danielle Palma	Environmental toxicology and chemistry, (20170700) Vol. 36, No. 7, pp. 1755-1763. Electronic Publication Date: 13 Sep 2016 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	The aim of the work presented in this paper was to evaluate the toxicity and potential effects of two glyphosate formulations on seed germination, brine shrimp and zebra fish larvae. The selected test species and design are not relatable to an EU level ecotoxicological risk assessment, as a USEPA approach was followed for a mixed consideration of diverse test species. The report provides insufficient description of study design and no specific rationale was cited for the formulations selected. Some methodology was performed according to OECD guidelines, however validity criteria were not evaluated and no analytical verification was performed.			Y
Hormetic effect of glyphosate on <i>Urochloa decumbens</i> plants.	de Moraes Carolina P; de Brito Ivana P F S; Carbonari Caio A; Velini Edivaldo D Tropaldi Leandro	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2019 Dec 27) pp. 1-6. Electronic Publication Date: 27 Dec 2019 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	This paper presents a summary and review of hormetic growth response papers. No supportive data was presented to support stated endpoints.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate sub-lethal toxicity to non-target organisms occurring in <i>Jatropha curcas</i> plantations in Brazil.	de Saraiva Althieris Souza; Sarmento Renato Almeida; Pedro Neto Marcal; Erasmo Eduardo Andrea Lemus; Belchior Diana Clessia Vieira; de Azevedo Emiliano Brandao Teodoro Adenir Vieira Teodoro Adenir Vieira	Experimental & applied acarology, (2016 Oct) Vol. 70, No. 2, pp. 179-187. Electronic Publication Date: 8 Aug 2016 Journal code: 8507436. E-ISSN: 1572-9702. L-ISSN: 0168-8162.	Non-relevant by full text	Endpoints not relatable to an EU level ecotoxicological risk assessment.			Y
Mutagenicity and genotoxicity in gill erythrocyte cells of <i>Poecilia reticulata</i> exposed to a glyphosate formulation.	De Souza Filho Jose Sousa Caio Cesar Neves; Da Silva Claudio Carlos; De Saboia-Morais Simone Maria Teixeira; Grisolia Cesar Koppe	Bulletin of environmental contamination and toxicology, (2013 Nov) Vol. 91, No. 5, pp. 583-7. Electronic Publication Date: 17 Sep 2013 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Non-relevant by full text	Methods and endpoints are not relevant to an EU level ecotoxicology assessment.	Y		Y
Comparative impact of two glyphosate-based formulations in interaction with <i>Limnoperna fortunei</i> on freshwater phytoplankton	De Stefano, L G; A Vinocur; D Cataldo; D Cristos; D Rojas; F Gattas; H Pizarro	Ecological indicators (2018), Volume 85, pp. 575-584 ISSN: 1470-160X Published by: Elsevier Ltd Source Note: 2018 Feb., v. 85	Non-relevant by full text	This paper looks at the interaction of herbicide formulations in conjunction with the presence of mussels on the development of periphyton and phytoplankton communities. As the effects cannot be related directly to the single active substance, this paper is not considered relevant for the EU level Ecotoxicological risk assessment for Annex I renewal.			Y
Effects of glyphosate and fluazifop-P-butyl on flavonoids content and growth of common buckwheat (<i>Fagopyrum esculentum</i> Moench)	Debski, H.; Wiczowski, W.; Szawara-Nowak, D.; Baczek, N.; Chrzanowski, G.; Horbowicz, M.	Fresenius Environmental Bulletin (2018), Volume 27, Number 1, pp. 91-97, 34 refs. ISSN: 1018-4619 Published by: Parlar Scientific Publications, Freising URL (Availability): http://www.prt-parlar.de/download_feb_2018/	Non-relevant by full text	Cellular level parameters discussed in the paper, with endpoints that are not relevant to an Annex I renewal from an ecotoxicological perspective.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Comparison of the response of seedlings of common buckwheat (<i>Fagopyrum esculentum</i> Moench) to glyphosate applied to the shoot or to the root zone.	Debski, Henryk; Szwed, Magdalena; Koczkodaj, Danuta; Kloczek, Jozef; Horbowicz, Marcin [Reprint Author]	Acta Agrobotanica, (2018) Vol. 71, No. 1, pp. Article No.: 1730. https://pbsociety.org.pl/journals/index.php/aa/article/view/aa.2015.043 . CODEN: AAGWAU. ISSN: 0065-0951. E-ISSN: 2300-357X.	Non-relevant by full text	Unable to establish the exposure rates used in the three different tests. mMolar solutions were prepared, but no attempt has been made to confirm dosing and no analysis performed. Endpoints are therefore not relevant to an EU level risk assessment from an ecotoxicological perspective.			
Impact of the invasive mussel <i>Limnoperna fortunei</i> on glyphosate concentration in water.	Di Fiori Eugenia Pizarro Haydee; dos Santos Afonso Maria; Cataldo Daniel	Ecotoxicology and environmental safety, (2012 Jul) Vol. 81, pp. 106-13. Electronic Publication Date: 16 May 2012 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Paper describes the use of golden mussels for removal of glyphosate from the water column. Endpoints presented cannot be be used in EU level Annex I renewal risk assessment.			
Acute and chronic toxicity of Roundup Weathermax and Ignite 280 SL to larval <i>Spea multiplicata</i> and <i>S. bombifrons</i> from the Southern High Plains, USA.	Dinehart Simon K Smith Loren M; McMurtry Scott T; Smith Philip N; Anderson Todd A; Haukos David A	Environmental pollution (Barking, Essex : 1987), (2010 Aug) Vol. 158, No. 8, pp. 2610-7. Electronic Publication Date: 11 Jun 2010 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Roundup Weathermax was used as a test item. The composition differs to that of the representative formulation for the Annex I renewal (MON 52276), and thus the results cannot be applied to the risk assessment for the EU renewal. Due to the test material not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
SELECTIVITY OF PESTICIDES USED IN SOYBEAN CROPS TO TRICHOGRAMMA PRETIOSUM RILEY, 1879 (HYMENOPTERA: TRICHOGRAMMATIDAE) PUPAE. Original Title: SELETIVIDADE DE PRODUTOS FITOSSANITARIOS UTILIZADOS NA CULTURA DA SOJA PARA PUPAS DE TRICHOGRAMMA PRETIOSUM RILEY	do Carmo, E. L. [Reprint Author]; Bueno, A. F.; Bueno, R. C. O. F.; Vieira, S. S.; Goulart, M. M. P.; Carneiro, T. R.	Arquivos do Instituto Biologico Sao Paulo, (2010) Vol. 77, No. 2, pp. 282-290. CODEN: AIBOA3. ISSN: 0020-3653.	Non-relevant by full text	Effects on parasitoid wasps via exposure of parasitised eggs which were immersed for 5 sec in test solutions. However, this is no adequate route of exposure and the content of active ingredient per area is unclear. Therefore the biological results cannot be attributed to a specific test concentration.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
A glyphosate-based herbicide induces histomorphological and protein expression changes in the liver of the female guppy <i>Poecilia reticulata</i> .	Dos Santos Ana Paula Rezende Rocha Thiago Lopes Borges Clayton Luiz; Bailao Alexandre Melo; de Almeida Soares Celia Maria de Saboia-Morais Simone Maria Teixeira	Chemosphere, (2017 Feb) Vol. 168, pp. 933-943. Electronic Publication Date: 9 Nov 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	The paper attempts to establish a proteomic method for detecting sub-lethal impacts of chemicals on fish. This is not relevant for risk assessment in the EU, where growth and reproductive parameters achieved in higher tier fish testing are considered. The formulation used is also not the representative formulation for the annex I renewal.			
Acute toxicity and effects of Roundup Original® on pintado da Amazonia.	Dos Santos Teixeira Jhonnes Marcos; da Silva Lima Valfran; da Costa Marisco Patricia de Moura Fernando Rafael; Sinhorin Adilson Paulo; Sinhorin Valeria Dornelles Gindri	Environmental science and pollution research international, (2018 Sep) Vol. 25, No. 25, pp. 25383-25389. Electronic Publication Date: 27 Jun 2018 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Endpoints presented were for a formulation that is not the representative formulation for the Annex I renewal.			Y
Landsnail eggs bioassays: A new tool to assess embryotoxicity of contaminants in the solid, liquid or gaseous phase of soil	Druart, Coline; Scheifler, Renaud; Millet, Maurice; de Vauflery, Annette	Applied soil ecology (2012), Volume 53, pp. 56-64 ISSN: 0929-1393 Published by: Elsevier B.V. Source Note: 2012 Feb., v. 53	Non-relevant by full text	Endpoints are not applicable to EU level ecotoxicology risk assessment. Approach described is novel and not validated.			Y
Glyphosate vulnerability explains changes in root-symbionts propagules viability in pampean grasslands	Druille, M; M N Cabello; P A GarcA-a Parisi; R A Golluscio; M Omacini	Agriculture, ecosystems & environment (2015), Volume 202, pp. 48-55 ISSN: 0167-8809 Published by: Elsevier B.V. Source Note: 2015 Apr. 01, v. 202	Non-relevant by full text	Findings cannot be related to an EU level ecotoxicological risk assessment.			Y
Arbuscular mycorrhizal fungi are directly and indirectly affected by glyphosate application	Druille, Magdalena; Omacini, Marina; Golluscio, Rodolfo A; Cabello, Marta N	Applied soil ecology (2013), Volume 72, pp. 143-149 ISSN: 0929-1393 Published by: Elsevier B.V. Source Note: 2013 Oct., v. 72	Non-relevant by full text	Describes an experiment to establish if fungal hyphae associated with plant roots are affected by glyphosate. Endpoints achieved not relatable to EU level risk assessment. Exposure rates cannot be determined from the paper.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of eight herbicides on seed germination and seedling growth of <i>Scutellaria baicalensis</i> Georg	Du, Xiaojuan; Liang, Tingting; Mu, Xiaoqian	Xibei Nongye Xuebao, (2012) Vol. 21, No. 4, pp. 202-206. CODEN: XNXIA9. ISSN: 1004-1389.	Non-relevant by full text	The formulation (Glyphosate (Baron®) 48% SL (Elhelb), is not the representative formulation for the EU Annex I renewal. The study was not conducted to GLP and/or according to a recognized test guideline and there are no validity criteria presented. The authors state that Roundup had no effect on the germination of <i>Scutellaria baicalensis</i> Georgi seeds in laboratory petri dish test but inhibited the growth of <i>Scutellaria baicalensis</i> Georgi seedlings. However, given the lack of standard guidelines and important material and application methods, in conjunction with insufficiently reported test conditions and biological data, no useful endpoint for the risk assessment can be derived.			
Effect of glyphosate herbicide on some hematological and biochemical parameters in <i>Carassius auratus</i> L	Dumitru, Gabriela; Ciornea, Elena Todirasu; Sandu, Ion	Revista de Chimie (Bucharest, Romania), (2019) Vol. 70, No. 2, pp. 518-521. CODEN: RCBUAU.	Non-relevant by full text	Sub-lethal effects on blood chemistry parameters are not relevant to an ecotoxicological risk assessment for the EU level renewal of glyphosate. On review of the report, the formulation was also a 48% a.e. content, with reasons for the observed effects related to POEA in the formulation described in the results. The representative formulation does not contain POEA, therefore results not relevant for the EU.			
Laboratory and field exposure of two species of juvenile amphibians to a glyphosate-based herbicide and <i>Batrachochytrium dendrobatidis</i> .	Edge Christopher B Gahl Megan K; Thompson Dean G; Houlahan Jeff E	The Science of the total environment, (2013 Feb 01) Vol. 444, pp. 145-52. Electronic Publication Date: 21 Dec 2012 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Formulation used is not the representative formulation for the Annex I renewal. Effects from co-formulants cannot be excluded.			Y
A silviculture application of the glyphosate-based herbicide VisionMAX to wetlands has limited direct effects on amphibian larvae.	Edge Christopher B Thompson Dean G; Hao Chunyan; Houlahan Jeff E	Environmental toxicology and chemistry, (2012 Oct) Vol. 31, No. 10, pp. 2375-83. Electronic Publication Date: 16 Aug 2012 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	The formulation used is not the representative formulation for the Annex I renewal. Effects from co-formulants cannot be excluded.			Y
Variation in amphibian response to two formulations of glyphosate-based herbicides.	Edge Christopher Gahl Meghan; Thompson Dean; Hao Chunyan; Houlahan Jeff	Environmental toxicology and chemistry, (2014 Nov) Vol. 33, No. 11, pp. 2628-32. Electronic Publication Date: 22 Sep 2014 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Roundup WeatherMax and Roundup Weed and Grass Control, which are non EU representative glyphosate formulated products were used as the test substances. Prior exposure history to other chemicals and other organisms within their natural environment was unknown. Several limitations were observed within the study including lack of exposure history of the local organisms, inability to attribute the results entirely to the test substance, inability to develop a dose-response relationship or derive endpoints within the study, the analytical approach and verification was lacking, and the study was not conducted according to a standard guideline.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The response of amphibian larvae to exposure to a glyphosate-based herbicide (Roundup WeatherMax) and nutrient enrichment in an ecosystem experiment.	Edge Christopher Thompson Dean Hao Chunyan Houlahan Jeff	Ecotoxicology and environmental safety, (2014 Nov) Vol. 109, pp. 124-32. Electronic Publication Date: 29 Aug 2014 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	WeatherMax, a non EU representative glyphosate formulated product was used as the test substance. Prior exposure history of the egg masses to other chemicals as well as other organisms within the wetlands was unknown as the study was conducted in a natural environment. Several limitations were observed within the study including lack of exposure history of the local organisms, inability to attribute the results entirely to the test substance, inability to develop a dose-response relationship within the study. Testing conditions were neither documented nor controlled, and representativeness of the test conditions were unknown as the study was not conducted according to a standard guideline.			Y
Side-effect of certain herbicides on egg parasitoid <i>Trichogramma evanescens</i> (West.) (Hymenoptera: Trichogrammatidae)	El Sebai, Osama A.; El-Tawil, Mohamed F.	Academic Journal of Entomology, (2012) Vol. 5, No. 1, pp. 1-10. CODEN: AJECBO. ISSN: 1995-8994.	Non-relevant by full text	The aim of the study was to compare the toxicity of four different commercially available herbicidal products to <i>T. evanescens</i> . Glyphosate was classified as harmless to <i>T. evanescens</i> wasps. The study was not conducted to a guideline or to GLP and the study design lacks some details compared with relevant guidelines. The test concentrations are based on nominal and no analytical verifications of test item concentrations were conducted. Only some details of the statistical analysis are reported. As the study is based on a glyphosate product, the toxicity of glyphosate active substance alone is unknown and therefore endpoints generated from this study are not quantifiable. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			
Effects of pesticides on the micro-flora of loamy soil obtained from Biological Garden, Federal University of Technology, Minna, Nigeria	Enemaduku, Abalaka M.; Idakwoji, K.; Yahaya, Daniyan S.	Journal of Scientific and Engineering Research (Shriganganagar, India) (2015), 2(4), 55-63 CODEN: JSERBR; ISSN: 2394-2630 URL: http://jsaer.com/download/vol-2-iss-4-2015/JSAER0204008.pdf	Non-relevant by full text	This monitoring study based on a Nigerian soil type, uses endpoints that are not applicable to an EU level ecotoxicological risk assessment.			
Detection of the desiccant and plant growth regulator chlormequat in honeybees and comb pollen.	Erban, T.; Trojakova, L.; Kamler, M.; Titera, D.	Veterinari Medicina (2017), Volume 62, Number 11, pp. 596-603, 24 refs. ISSN: 0375-8427 DOI: 10.17221/52/2017-VETMED Published by: Institute of Agricultural Economics and Information, Prague URL (Availability): http://vri.cz/docs/vetmed/62-11-596.pdf	Non-relevant by full text	Investigation of samples from hives exhibiting poisoning. Analyzed many pesticides (including glyphosate). No glyphosate detections reported.			
Effect of glyphosate on honey bee (<i>Apis Mellifera</i>) performance	Faghani, Mostafa	Arthropods, Vol. 7, No. 3, pp. 77-81, 20180901 E-ISSN: 2224-4255 Published by: International Academy of Ecology and Environmental Sciences (IAEES), Hong Kong	Non-relevant by full text	Presents no data that can be used in an EU based risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Potential of the microbial assay for risk assessment (MARA) for assessing ecotoxicological effects of herbicides to non-target organisms.	Fai Patricia Bi Asanga; Mbida Mpoame; Demefack Jean Marc; Yamssi Cedric	Ecotoxicology (London, England), (2015 Nov) Vol. 24, No. 9, pp. 1915-22. Electronic Publication Date: 11 Sep 2015 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	Novel test design / approach - not relatable to an EU level ecotoxicological risk assessment for Annex I renewal.			Y
Changes in hypopharyngeal glands of nurse bees (<i>Apis mellifera</i>) induced by pollen-containing sublethal doses of the herbicide Roundup	Faita, Marcia Regina; Oliveira, Eliana de Medeiros; Alves, Valter Vieira Junior; Orth, Afonso Inacio; Nodari, Rubens Onofre	Chemosphere, (2018) Vol. 211, pp. 566-572. CODEN: CSMHAF. ISSN: 0045-6535.	Non-relevant by full text	This test was conducted using Roundup Original which contains POEA and is not therefore relevant to the EU level risk assessment for ANNEX I renewal.			Y
Effects of heavy metals and pesticides on survival of <i>Artemia franciscana</i> .	Falis, Marcel [Reprint Author]; Spalkova, Michaela; Legath, Jaroslav	Acta Veterinaria Brno, (2014) Vol. 83, No. 2, pp. 95-99. http://vfu-www.vfu.cz/acta-vet . CODEN: ACVTB9. ISSN: 0001-7213. E-ISSN: 1801-7576.	Non-relevant by full text	This paper presents data for a formulation that cannot be related to an EU level risk assessment.			
Herbicide Roundup® and its main constituents cause oxidative stress and inhibit acetylcholinesterase in liver of <i>Carassius auratus</i>	Fan, Jin Y; Geng, Jin J; Ren, Hong Q; Wang, Xiao R; Han, Chao	Journal of environmental science and health. Part B. Pesticides, food contaminants and agricultural wastes (2013), Volume 48, Number 10, pp. 844-850 ISSN: 1532-4109 Published by: Taylor & Francis Group Source Note: 2013 Oct. 3, v. 48, no. 10	Non-relevant by full text	Contains POEA, therefore not relevant to EU renewal.			Y
Hydroxyl radical generation and oxidative stress in <i>Carassius auratus</i> exposed to glyphosate and its formulation	Fan, Jinyu; Geng, Jinju; Ren, Hongqiang; Wang, Xiaorong	Toxicological and environmental chemistry (2013), Volume 95, Number 7, pp. 1183-1191 ISSN: 1029-0486 Published by: Taylor & Francis Source Note: 2013 Aug. 1, v. 95, no. 7	Non-relevant by full text	Contains POEA, therefore not relevant to EU renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Behavioral responses of the Strawberry Poison Frog (<i>Oophaga pumilio</i>) to herbicide olfactory cues: possible implications for habitat selection and movement in altered landscapes.	Farabaugh, N. F. [Reprint Author]; Nowakowski, A. J.	Canadian Journal of Zoology, (NOV 2014) Vol. 92, No. 11, pp. 979-984. CODEN: CJZOAG. ISSN: 0008-4301. E-ISSN: 1480-3283.	Non-relevant by full text	Endpoints based on avoidance behaviour are not used in the ecotoxicological risk assessment for the Annex I renewal purposes.			
Effects of the Herbicide Glyphosate on Honey Bee Sensory and Cognitive Abilities: Individual Impairments with Implications for the Hive.	Farina Walter M; Balbuena M Sol; Herbert Lucila T; Mengoni Gonalons Carolina; Vazquez Diego E Farina Walter M; Balbuena M Sol; Herbert Lucila T; Mengoni Gonalons Carolina; Vazquez Diego E	Insects, (2019 Oct 18) Vol. 10, No. 10. Electronic Publication Date: 18 Oct 2019 Journal code: 101574235. ISSN: 2075-4450. L-ISSN: 2075-4450. Report No.: PMC-PMC6835870.	Non-relevant by full text	This is a review article. No data presented that is supported.			
Influence of glyphosate on the morphogenesis and biochemical indicators of onions and wheat.	Fedorova, N. V.; Porfiryeva, E. A.; Dobrosmyslova, I. A.; Sazanova, A. A.	Zashchita i Karantin Rastenii (2019), Number 9, pp. 47-48, 6 refs. ISSN: 1026-8634 Published by: Izdatel'stvo Kolos, Moscow URL (Availability): http://www.z-i-k-r.ru	Non-relevant by full text	Article concerns the effect of herbicide use on the nutrient content of wheat and onions. The endpoints / observations are not relatable to an EU level ecotoxicological risk assessment for Annex I renewal.			
Impact of the herbicide glyphosate roundup (41%) on the haematology of the freshwater fish, <i>Catla catla</i> (Hamilton)	Felix, F. Jerald; Saradhamani, N.	IOSR Journal of Environmental Science, Toxicology and Food Technology, (2015) Vol. 9, No. 4-3, pp. 56-60. CODEN: IJESP4. ISSN: 2319-2402.	Non-relevant by full text	Contains POEA, therefore not relevant to EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
efficacy of herbicide glyphosate hijack on the blood parameters of the freshwater fish, <i>Catla catla</i> (HAM)	Felix, F. Jerald; Saradhamani; Prabhu, F. Charles Maria; Mahalakshmi	Asian Journal of Biology, (2018) Vol. 7, No. 2, pp. AJOB.38848. CODEN: AJBSGS. ISSN: 2456-7124.	Non-relevant by full text	Biological impacts on enzyme levels in blood are not used in an EU level ecotoxicological risk assessment.			
The response of the algae <i>Fucus virsoides</i> (Fuciales, Ochrophyta) to Roundup® solution exposure: A metabolomics approach.	Felline S Del Coco L Kaleb S; Falace A Guarnieri G Fraschetti S Terlizzi A Fanizzi F P	Environmental pollution (Barking, Essex : 1987), (2019 Nov) Vol. 254, No. Pt A, pp. 112977. Electronic Publication Date: 27 Jul 2019 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Novel approach utilising metabolomics. The latter is not used in EU level risk assessment for Annex I renewal and is thus not releatable to the risk assessment.			
Cassava physiological responses to the application of herbicides. Respostas fisiologicas da mandioca a aplicacao de herbicidas.	Ferreira, E. A.; Matos, C. da C. de; Barbosa, E. A.; Silva, D. V.; Santos, J. B. dos; Pereira, G. A. M.; Faria, A. T.; Silva, C. T. da; da C. de Matos, C.; de Matos, C. da C.; dos Santos, J. B.; da Silva, C. T.	Semina: Ciencias Agrarias (Londrina) (2015), Volume 36, Number 2, pp. 645-655, 29 refs. ISSN: 1676-546X DOI: 10.5433/1679-0359.2015v36n2p645 Published by: Universidade Estadual de Londrina, Londrina URL (Availability): http://www.uel.br/revistas/uel/index	Non-relevant by full text	Endpoints not relatable to an EU level ecotoxicological risk assessment for Annex I renewal.			
Low Concentrations of Glyphosate-Based Herbicide Affects the Development of <i>Chironomus xanthus</i>	Ferreira-Junior, Diogenis F; Renato Almeida Sarmiento; AlthiA©ris de Souza Saraiva; Renata Ramos Pereira; Marcelo Coutinho PicanA o; JoA o L T Pestana; Amadeu M V M Soares	Water, air, and soil pollution (2017), Volume 228, Number 10, 390 p. ISSN: 0049-6979 Published by: Springer International Publishing Source Note: 2017 Oct., v. 228, no. 10	Non-relevant by full text	The purpose of the study was to test acute and chronic toxicity of Roundup® Original to a tropical fresh water midge. Roundup Original contains POEA surfactant which is not permitted for use in formulations in the EU. The representative formulation (MON 52276) does not contain POEA. The influence of the surfactant on the achieved results in this study cannot be excluded. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
Effects of four types of pesticides on survival, time and size to metamorphosis of two species of tadpoles (<i>Rhinella marina</i> and <i>Physalaemus centralis</i>) from the southern Amazon, Brazil.	Figueiredo, Jaime [Reprint Author]; Rodrigues, Domingos de Jesus	Herpetological Journal, (JAN 2014) Vol. 24, No. 1, pp. 7-15. ISSN: 0268-0130.	Non-relevant by full text	The aim of the work presented in the paper was to evaluate the effects of four commonly applied herbicides on the survival and development on amphibians in Brazil. It was stated by the authors that standard fish surrogate endpoint data may not be directly applicable to Brazil's amphibian species. Thus the local species selected, and testing approach used are not directly relatable to an EU level ecotoxicological risk assessment for Annex I renewal purposes. Furthermore, the acute and chronic toxicity tests were not conducted according to any recognised test guideline with neither specific validity criteria nor animal welfare considered. The frog eggs were collected from temporary ponds in Southern Amazonia, where previous exposure of the eggs to other chemicals in the environment is unclear. The eggs were hatched in rainwater, without measured water quality characteristics. The test item selected for glyphosate was a local glyphosate formulation (480 g/L). The effect of glyphosate on metamorphosis was inconclusive. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Toxicological effects of a glyphosate-based formulation on the liver of <i>Poecilia reticulata</i>	Filho, Jose De Souza; Pires, Fernando Santiago; Grisolia, Cesar Koppe; De Saboia-Morais, Simone Maria Teixeira	Current Topics In Toxicology. Vol. 9, pp. 81-91. 2013. ISSN: 0972-8228 Published by: Research Trends, T.C. 17/250(3) Chadiyara Road Trivandrum Kerala 695-012 India	Non-relevant by full text	The study was performed to assess the acute mortality (based on OECD 203) and sub-lethal effects (including histopathology). The study lacks several experimental standard procedures (e.g. analytical verification, reporting of validity criteria). Furthermore the formulation (Roundup Transorb) is not the representative formulation for the EU Annex I renewal (MON 52276) that contains POEA, a co-formulant that is not permitted in formulations in the EU. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			
Effect of Roundup Herbicide on the Temperature Characteristics of Maltase of the Intestinal Mucosa in Juvenile Fish	Filippov, A. A.; Golovanova, I. L. (Reprint) Smimov, M. S.	INLAND WATER BIOLOGY, (APR 2019) Vol. 12, No. 2, pp. 248-253. ISSN: 1995-0829.	Non-relevant by full text	Enzymatic impacts resulting from exposure are not considered in the EU level ecotoxicological risk assessment for Annex I renewal. It is extremely difficult to relate the findings to an EU level exposure scenario.			
Effects of glyphosate on early life stages: comparison between <i>Cyprinus carpio</i> and <i>Danio rerio</i> .	Fiorino Emma; Faggio Caterina Sehonova Pavla; Plhalova Lucie; Blahova Jana; Svobodova Zdenka Sehonova Pavla	Environmental science and pollution research international, (2018 Mar) Vol. 25, No. 9, pp. 8542-8549. Electronic Publication Date: 8 Jan 2018 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	This paper is a poster abstract with no associated paper. There is insufficient information presented in the poster abstract to establish relevance of the poster to the Annex I renewal.			Y
Effects of glyphosate and polyoxyethylene amine on metabolic rate and energy reserves of <i>Procambarus clarkii</i> juveniles.	Frontera, J. L.; Gilette, N.; Hull, B.; Korang, J.; Amorim, C.; Vatnick, L.; Rodriguez, E. M.	Open Environmental Sciences (2014), Volume 8, pp. 49-53, 34 refs. ISSN: 1876-3251 Published by: Bentham Open, Bussum URL (Availability): http://benthamopen.com/contents/pdf/TOENVIRJ/TOENVI RJ-8-49.pdf	Non-relevant by full text	Contains POEA, therefore not relevant to EU renewal.			
Comparative toxicity of two glyphosate formulations (original formulation of Roundup® and Roundup WeatherMAX®) to six North American larval anurans.	Fuentes Latice Moore Lindsay J; Rodgers John H Jr; Bowerman William W; Yarrow Gregory K; Chao Wayne Y	Environmental toxicology and chemistry, (2011 Dec) Vol. 30, No. 12, pp. 2756-61. Electronic Publication Date: 14 Oct 2011 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	The original formulation of Roundup and Roundup WeatherMAX are not the representative formulation for the Annex I renewal. The original formulation of Roundup used, contains a POEA surfactant, which is not permitted for use in the EU. The test design is well described in the paper, but due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
EFFECTOS DEL HERBICIDA RON-DO® SOBRE Cerodaphnia reticulata (CRUSTACEA, CLADOCERA) Y DEGRADABILIDAD DEL GLIFOSATO (N-FOSFOMETILGLICINA) EN CONDICIONES EXPERIMENTALES	Gagneten, Ana Maria ; Maitre, Maria Ines ; Reno, Ulises ; Regalado, Luciana ; Roldan, Soledad ; Enrique, Susana	Natura Neotropicalis, Vol. 45, No. 1&2, pp. 71-85, 20140101, Graphs, Tables, References ISSN: 0329-2177 Published by: Jimena Cazenave (Editor in chief Natura Neotropicalis), Santo Tome	Non-relevant by full text	Formulation is not the representative formulation for the Annex I EU renewal.			
Effects of chytrid fungus and a glyphosate-based herbicide on survival and growth of wood frogs (<i>Lithobates sylvaticus</i>).	Gahl Megan K Pauli Bruce D; Houlahan Jeff E	Ecological applications : a publication of the Ecological Society of America, (2011 Oct) Vol. 21, No. 7, pp. 2521-9. Journal code: 9889808. ISSN: 1051-0761. L-ISSN: 1051-0761.	Non-relevant by full text	Toxicity of glyphosate products to wild wood frogs and chytrid fungus are assessed.. The study was conducted in Canada. Endpoints do not lend themselves to the EU renewal of glyphosate.			Y
Effect of Herbicide Glyphosate on <i>Drosophila melanogaster</i> Fertility and Lifespan.	Galin R R; Akhtyamova I F; Pastukhova E I	Bulletin of experimental biology and medicine, (2019 Sep) Vol. 167, No. 5, pp. 663-666. Electronic Publication Date: 17 Oct 2019 Journal code: 0372557. E-ISSN: 1573-8221. L-ISSN: 0007-4888.	Non-relevant by full text	The formulation used (GLYPHOS) contains POEA which is not relevant to the EU level ecotoxicological risk assessment for Annex I renewal, as the representative formulation does not contain POEA, which is a known surfactant this is known to be more toxic than glyphosate.			
Impact of litter contaminated with glyphosate-based herbicide on the performance of <i>Pontosclex corethrurus</i> , soil phosphatase activities and soil pH	GarcA-a-PA©rez, JosA © Antonio; Enrique AlarcA3n; Yesica HernAXA1ndez; Christian HernAXA1ndez	Applied soil ecology (2016) ISSN: 0929-1393 Published by: Elsevier B.V. Source Note: 2016,	Non-relevant by full text	Relates to a long term monitoring study on earthworms specific to South America.			Y
Toxicity of atrazine- and glyphosate-based formulations on <i>Caenorhabditis elegans</i> .	Garcia-Espineira Maria; Olivero-Verbel Jesus Tejedea-Benitez Lesly	Ecotoxicology and environmental safety, (2018 Jul 30) Vol. 156, pp. 216-222. Electronic Publication Date: 20 Mar 2018 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	The formulated product used in the test contains MON 2139 which contains POEA (MON0818). Therefore findings are not relevant to the EU level and representative formulation for the Annex I renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Toxicity evaluation of cypermethrin, glyphosate, and malathion, on two indigenous zooplanktonic species.	Garza-Leon Carlos Vicente; Arzate-Cardenas Mario Alberto; Rico-Martinez Roberto	Environmental science and pollution research international, (2017 Aug) Vol. 24, No. 22, pp. 18123-18134. Electronic Publication Date: 19 Jun 2017 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	The tested formulation is not the representative formulation for the Annex I renewal.			Y
Glyphosate-based herbicides reduce the activity and reproduction of earthworms and lead to increased soil nutrient concentrations.	Gaupp-Berghausen Mailin; Zaller Johann G Hofer Martin; Rewald Boris	Scientific reports, (2015 Aug 05) Vol. 5, pp. 12886. Electronic Publication Date: 5 Aug 2015 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: NLM-PMC4542661; PMC-PMC4542661.	Non-relevant by full text	Paper discusses indirect impact of nutrient loads in soil after GBH application. Not relatable to EU ecotoxicology assessment.			
Predicting joint toxicity of organophosphorus and triazine pesticides on green algae using the generalized concentration addition model.	Ge HuiLin; Liu ShuShen; Su BingXia; Ge, H. L.; Liu, S. S.; Su, B. X.	China Environmental Science (2014), Volume 34, Number 9, pp. 2413-2419, 22 refs. ISSN: 1000-6923 Published by: Editorial Board of China Environmental Science, Beijing URL (Availability): http://www.zghjck.com.cn	Non-relevant by full text	Discusses use of novel test approaches, not currently relevant to EU level risk assessment in ecotoxicology.			
GLYPHOSATE-BASED HERBICIDE ALTERS THE HISTOLOGICAL STRUCTURE OF GILLS OF TWO ECONOMICALLY IMPORTANT CYPRINID SPECIES (COMMON CARP, CYPRINUS CARPIO AND BIGHEAD CARP, ARISTICHTHYS NOBILIS).	Georgieva, E.; Yancheva V [Reprint Author]; Velcheva I; Mollov I; Todorova, K.; Tomov, S.; Tsvetanova V; Stoyanova, S.	Applied Ecology and Environmental Research, (2018) Vol. 16, No. 3, pp. 2295-2305. http://www.aloki.hu . ISSN: 1589-1623. E-ISSN: 1785-0037.	Non-relevant by full text	Observations in the paper cannot be related to the ANNEX I level EU risk assessment for renewal. Sublethal effects at the histopathological level are not considered in the EU level ecotox risk assessment.			
Avoidance of three herbicide formulations by Eastern Red-backed Salamanders (<i>Plethodon cinereus</i>).	Gertzog, B. J.; Kaplan, L. J.; Nichols, D.; Smith, G. R.; Rettig, J. E.	Herpetological Conservation and Biology (2011), Volume 6, Number 2, pp. 237-241, 30 refs. ISSN: 1931-7603 Published by: Herpetological Conservation and Biology, Corvallis URL (Availability): http://www.herpconbio.org/Volume_6/Issue_2/Gertzog_etal_2011.pdf	Non-relevant by full text	Salamanders were exposed to glyphosate (and other pesticides) in a petri dish with avoidance measured. The endpoint is not relevant to the regulatory renewal of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of Roundup formulations, nutrient addition, and Western mosquitofish (<i>Gambusia affinis</i>) on aquatic communities.	Geyer Rebecca L.; Smith Geoffrey R; Rettig Jessica E	Environmental science and pollution research international, (2016 Jun) Vol. 23, No. 12, pp. 11729-39. Electronic Publication Date: 5 Mar 2016 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Formulations used do not match that of the representative formulation for the Annex I renewal. Effects from co-formulants cannot be excluded.			
Avoidance behavior of <i>Eisenia foetida</i> to acetone, deltamethrin and glyphosate	Gherhardt, T.; Bolcu, C.	Annals of West University of Timisoara, Series of Chemistry, (2011) Vol. 20, No. 2, pp. 1-10. CODEN: AWTCFO. ISSN: 1224-9513.	Non-relevant by full text	This study was a new design to look at the avoidance of earthworms to chemicals. The study was not conducted to a known guideline. For the glyphosate part of the study, all the worms died due to heat/dehydration and so the effects of glyphosate were not clearly determined and the endpoints are not relevant to the regulatory risk assessment of glyphosate.			
Effect of a glyphosate-based herbicide in <i>Cyprinus carpio</i> : assessment of acetylcholinesterase activity, hematological responses and serum biochemical parameters.	Gholami-Seyedkolaei Seyed Jalil Mirvaghefi Alireza; Farahmand Hamid; Kosari Ali Asghar	Ecotoxicology and environmental safety, (2013 Dec) Vol. 98, pp. 135-41. Electronic Publication Date: 26 Sep 2013 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Paper describes haematological and enzymatic biomarkers that could be used to assess the impact on fish in the field. There are no data presented that could be used in EU level Annex I renewal Ecotoxicological risk assessment.			Y
Optimization of recovery patterns in common carp exposed to roundup using response surface methodology: evaluation of neurotoxicity and genotoxicity effects and biochemical parameters.	Gholami-Seyedkolaei Seyed Jalil Mirvaghefi Alireza; Farahmand Hamid; Kosari Ali Asghar; Gholami-Seyedkolaei Seyed Jalal; Gholami-Seyedkolaei Seyed Jamal	Ecotoxicology and environmental safety, (2013 Dec) Vol. 98, pp. 152-61. Electronic Publication Date: 2 Oct 2013 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.	Y	Y	Y
Acute toxicity tests and meta-analysis identify gaps in tropical ecotoxicology for amphibians	Ghose, Sonia L.; Donnelly, Maureen A.; Kerby, Jacob; Whitfield, Steven M.	Environmental Toxicology and Chemistry, (2014) Vol. 33, No. 9, pp. 2114-2119. CODEN: ETOCDK. ISSN: 0730-7268.	Non-relevant by full text	Paper does not present endpoint data on the representative formulation. Therefore not relevant.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of Glyphosate-Based Herbicide Sub-Lethal Concentrations on Fish Feeding Behavior.	Giaquinto Percilia Cardoso; de Sa Marina Borges; Sugihara Vanessa Seiko; Goncalves Bruno Bastos; Delicio Helton Carlos Barki Assaf	Bulletin of environmental contamination and toxicology, (2017 Apr) Vol. 98, No. 4, pp. 460-464. Electronic Publication Date: 10 Feb 2017 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Non-relevant by full text	Test design and endpoints are not used in EU level risk assessment for ANNEX I renewal.			Y
Earthworm tolerance to residual agricultural pesticide contamination: field and experimental assessment of detoxification capabilities.	Givaudan Nicolas; Wiegand Claudia Binet Francoise Le Bot Barbara	Environmental pollution (Barking, Essex : 1987), (2014 Sep) Vol. 192, pp. 9-18. Electronic Publication Date: 27 May 2014 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Study provides information at the cellular/molecular level and is not an ecotoxicological relevant study			Y
Effects of glyphosate acid and the glyphosate-commercial formulation (Roundup) on <i>Dimorphandra wilsonii</i> seed germination: Interference of seed respiratory metabolism.	Gomes Marcelo Pedrosa da Silva Cruz Fernanda Vieira; Bicalho Elisa Monteze; Borges Felipe Viegas; Garcia Queila Souza Fonseca Marcia Bacelar Juneau Philippe	Environmental pollution (Barking, Essex : 1987), (2017 Jan) Vol. 220, No. Pt A, pp. 452-459. Electronic Publication Date: 7 Oct 2016 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Findings are not relatable to an EU level Annex I risk assessment as this species is only found in Brazil.			
Effects of a glyphosate-based herbicide on mate location in a wolf spider that inhabits agroecosystems.	Griesinger Laurie M Evans Samuel C; Rypstra Ann L	Chemosphere, (2011 Sep) Vol. 84, No. 10, pp. 1461-6. Electronic Publication Date: 8 May 2011 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Study looks at the potential impact of glyphosate product on wolf spider mate location. Conducted in the US. No relevant endpoints generated for use in the risk assessment for the renewal of glyphosate.			Y
EFFECT OF ROOT-ZONE GLYPHOSATE EXPOSURE ON GROWTH AND ANTHOCYANINS CONTENT OF RADISH SEEDLINGS	Grzesiuk, Anna; Debski Henryk; Okninska, Katarzyna; Koczkodaj, Danuta; Szwed, Magdalena; Horbowicz, Marcin (Reprint)	ACTA SCIENTIARUM POLONORUM-HORTORUM CULTUS, (2018) Vol. 17, No. 2, pp. 3-10. ISSN: 1644-0692.	Non-relevant by full text	Unable to establish what exposure concentrations were used in the study. Therefore not relatable to an EU level risk assessment for EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Investigation of some pesticides' effects on activities of glutathione reductase and glutathione S-transferase purified from turkey liver under in vitro conditions.	Gueller, P.; Akkemik, E.; Koer, S.; Ciftci, M.	Journal of the Institute of Science and Technology (2018), Volume 8, Number 3, pp. 211-217, 34 refs. ISSN: 2146-0574 Published by: Igdir University, Igdir URL (Availability): https://dergipark.org.tr/tr/download/article-file/533192	Non-relevant by full text	Paper describes an in vitro enzyme assay that cannot be related to an EU level ecotoxicological risk assessment.			
Soil microbial communities and glyphosate decay in soils with different herbicide application history.	Guizarro Keren Hernandez; Castellote Martin; Costa Jose Luis Aparicio Virginia; De Geronimo Eduardo Figuerola Eva L Erijman Leonardo	The Science of the total environment, (2018 Sep 01) Vol. 634, pp. 974-982. Electronic Publication Date: 11 Apr 2018 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Soil dissipation in Argentina is difficult to relate and thus not relevant to EU risk assessment.			
DNA and chromosomal damage induced in fish (<i>Anguilla anguilla</i> L.) by aminomethylphosphonic acid (AMPA)--the major environmental breakdown product of glyphosate.	Guilherme S Santos M A; Gaivao I; Pacheco M	Environmental science and pollution research international, (2014) Vol. 21, No. 14, pp. 8730-9. Electronic Publication Date: 4 Apr 2014 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	The study assessed the impact of AMPA on <i>Anguilla anguilla</i> using COMET and ENA assays. The assays are not considered relevant to the ecotoxicological risk assessment for Annex I renewal. Therefore this paper should be considered non-relevant.	Y	Y	Y
Disruption of the hatching dynamics of zooplankton egg banks due to glyphosate application.	Gutierrez Maria Florencia Battauz Yamila Caisso Belen	Chemosphere, (2017 Mar) Vol. 171, pp. 644-653. Electronic Publication Date: 26 Dec 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Endpoints based on abundance are used in EU level ecotoxicological risk assessment. The formulation used is not the representative formulation and therefore the impact of co-formulants cannot be excluded. Therefore this study is not relevant to the Annex I renewal.			Y
Effects of a glyphosate-based herbicide on soil animal trophic groups and associated ecosystem functioning in a northern agricultural field	Hagner, Marleena; Mikola, Juha; Saloniemi, Irma; Saikkonen, Kari; Helander, Marjo	Scientific Reports, (2019) Vol. 9, No. 1, pp. 1-13. CODEN: SRCEC3. ISSN: 2045-2322.	Non-relevant by full text	This study looked at the effect of Roundup + hoeing on soil organisms. Effects on soil organisms based on Roundup alone cannot be determined from the presented data test groups. The test substance used is also based MON 78294 which is not the representative formulation for the Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The impact of pesticides on the pathogen <i>Batrachochytrium dendrobatidis</i> independent of potential hosts.	Hanlon Shane M Parris Matthew J	Archives of environmental contamination and toxicology, (2012 Jul) Vol. 63, No. 1, pp. 137-43. Electronic Publication Date: 7 Jan 2012 Journal code: 0357245. E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Non-relevant by full text	Paper discusses the impact of various pesticides on fungal spores using approaches that generate endpoints not used in EU ecotoxicology risk assessment for Annex I renewal.			Y
The interactive effects of chytrid fungus, pesticides, and exposure timing on gray treefrog (<i>Hyla versicolor</i>) larvae.	Hanlon Shane M Parris Matthew J	Environmental toxicology and chemistry, (2014 Jan) Vol. 33, No. 1, pp. 216-22. Electronic Publication Date: 20 Nov 2013 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Contains POEA and thus not relevant to the EU level Annex I ecotoxicological risk assessment.			Y
Ecotoxicological hazards of herbicides on biological attributes of <i>Zygogramma bicolorata</i> Pallister (Coleoptera: Chrysomelidae).	Hasan Fazil Ansari M Shafiq	Chemosphere, (2016 Jul) Vol. 154, pp. 398-407. Electronic Publication Date: 11 Apr 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Novel surface residue exposure study that presents endpoint data that is not relatable to the EU level risk assessment.			Y
Interaction of some herbicides with phosphate solubilization by <i>Aspergillus niger</i> and <i>Aspergillus fumigatus</i> .	Hefnawy, M. A.; Essa, O. A.; Amar, A. A.	Australian Journal of Basic and Applied Sciences (2012), Volume 6, Number 10, pp. 518-524, 20 refs. ISSN: 1991-8178 Published by: INSInet Publications, Faisalabad URL (Availability): http://www.ajbasweb.com/ajbas/2012/October/518-524.pdf	Non-relevant by full text	Findings are not directly related to the effects of glyphosate on the organism.			
Effects of field-realistic doses of glyphosate on honeybee appetitive behaviour.	Herbert Lucila T; Vazquez Diego E; Arenas Andres; Farina Walter M	The Journal of experimental biology, (2014 Oct 01) Vol. 217, No. Pt 19, pp. 3457-64. Electronic Publication Date: 25 Jul 2014 Journal code: 0243705. E-ISSN: 1477-9145. L-ISSN: 0022-0949.	Non-relevant by full text	Endpoints described are not currently relevant to EU level ecotoxicology risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Toxic effect of herbicides used for water hyacinth control on two insects released for its biological control in South Africa	Hill, Martin P; Coetzee, Julie A; Ueckermann, Claudia	Biocontrol science and technology (2012), pp. 1321-1333 ISSN: 1360-0478 Published by: Taylor & Francis Group Source Note: 2012 Nov. 1, v. 22, no. 11	Non-relevant by full text	Non-EU monitoring study. Extrapolation to EU is difficult.			Y
Effects of egg exposure to atrazine and/or glyphosate on bone development in <i>Podocnemis unifilis</i> (Testudines, Podocnemididae).	Hirano Liria Queiroz Luz Alves Leticia da Silva; Simoes Karina; Vieira Lucelia Goncalves Menezes-Reis Lorena Tannus; Santos Andre Luiz Quagliatto Mendonca Juliana Dos Santos	Ecotoxicology and environmental safety, (2019 Jul 02) Vol. 182, pp. 109400. Electronic Publication Date: 2 Jul 2019 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Test approaches and observations performed are not relatable to EU level risk assessment.			Y
Assessment of the oxidative and genotoxic effects of the glyphosate-based herbicide roundup on the freshwater shrimp, <i>Macrobrachium nipponensis</i> .	Hong Yuhang Yang Xiaozhen Huang Yi; Yan Guangwen Cheng Yongxu	Chemosphere, (2018 Nov) Vol. 210, pp. 896-906. Electronic Publication Date: 17 Jul 2018 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Study conducted using a formulation of glyphosate that is not the representative formulation for the EU renewal.			Y
Lethal and sub-lethal effects of cypermethrin and glyphosate on the freshwater's copepod, <i>Acanthocyclops robustus</i> .	Houssou, A. M. [Reprint Author]; Dagueue, E. J.; Montchowui, E.	ISJ-Invertebrate Survival Journal, (2017) Vol. 14, pp. 140-148. http://www.isj.unimo.it/contents.htm . ISSN: 1824-307X.	Non-relevant by full text	The test species selected is also not described and environmental holding conditions (water quality) prior to and during the study were not indicated). The formulation (Kumark® (480 g/L) is not the representative formulation for the EU Annex I renewal (MON 52276). The study was not conducted to a guideline, but the acute toxicity test can be considered in-line with OECD guideline 202. According to OECD 202, the validity criteria are not met for Glyphosate (> 10 % mortality in the control). Additionally, there were no quantifiable endpoints presented in the paper to a non-standard species. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			
Exposure to a commercial glyphosate formulation (Roundup®) alters normal gill and liver histology and affects male sexual activity of <i>Jenynsia multidentata</i> (Anablepidae, Cyprinodontiformes).	Hued Andrea Cecilia Oberhofer Sabrina; de los Angeles Bistoni Maria	Archives of environmental contamination and toxicology, (2012 Jan) Vol. 62, No. 1, pp. 107-117. Electronic Publication Date: 4 Jun 2011 Journal code: 0357245. E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Non-relevant by full text	Not the representative formulation. The formulation Roundup Max is based on MON 14420, which is not MON 52276.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Genotoxic effects induced by glyphosate-based herbicide on two gammarid species: the invasive <i>Dikerogammarus villosus</i> (Sowinsky, 1894) (Crustacea, Amphipoda) and the native <i>Echinogammarus veneris</i> (Heller, 1865).	Iannilli, Valentina [Reprint Author]; Lecce, Francesca; Latella, Leonardo	Fundamental and Applied Limnology, (DEC 2019) Vol. 193, No. 2, pp. 143-153. http://www.ingentaconnect.com/content/schweiz/fal . ISSN: 1863-9135. E-ISSN: 1863-9135.	Non-relevant by full text	Endpoints cannot be used in an EU ecotoxicological risk assessment for Annex I renewal.			
TOXICITY TEST OF INDIVIDUAL AND COMBINED TOXIC EFFECTS OF HERBICIDE AMEGA AND COPPER-SULPHATE ON PHEASANT EMBRYOS. Original Title: AMEGA GYOMIRTO SZERES A REZ-SZULFAT EGYEDI ES EGYUTTES MEREGLHATASANAK VIZSGALATA FACANEMBRIOKBAN.	Imre, Pinter [Reprint Author]; Geza, Szemeredy; Rita, Szabó; Jozsef, Lehel; Peter, Budal	Novenyvdelem, (NOV 2018) Vol. 54, No. 11, pp. 476-482. ISSN: 0133-0829.	Non-relevant by full text	It is not possible to relate the observed effects in the study to the ecotoxicology risk assessment for EU renewal.			
Ecotoxicological effects of the herbicide glyphosate in non-target aquatic species: Transcriptional responses in the mussel <i>Mytilus galloprovincialis</i> .	Milan M Dalla Rovere G; Ferraresso S; Patarnello T Smits M Pastore P; Bogianni S Marin M G; Matozzo V Bargelloni L	Environmental pollution (Barking, Essex : 1987), (2018 Jun) Vol. 237, pp. 442-451. Electronic Publication Date: 15 Mar 2018 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	No control data are presented. The concept of up and down-regulation of genes following exposure to glyphosate within the context of a risk assessment is not relatable to the EU renewal. The purity of the test substance is not presented so dosing cannot be confirmed. The environmental conditions of the exposure phase are not presented other than salinity and temperature. No positive control included.			Y
Evaluation of biochemical markers in the golden mussel <i>Limnoperna fortunei</i> exposed to glyphosate acid in outdoor microcosms.	Iummato Maria Mercedes Di Fiori Eugenia; Sabatini Sebastian Eduardo; Cacciatore Luis Claudio; Cochon Adriana Cristina; de Molina Maria del Carmen Rios; Juarez Angela Beatriz	Ecotoxicology and environmental safety, (2013 Sep) Vol. 95, pp. 123-9. Electronic Publication Date: 27 Jun 2013 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Cellular level endpoints cannot be related to the Ecotoxicology Annex I renewal risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
A Glyphosate Pulse to Brackish Long-Term Microcosms Has a Greater Impact on the Microbial Diversity and Abundance of Planktonic Than of Biofilm Assemblages	Janben Rene; Werner, Johannes; Labrenz, Matthias (Reprint) Skeff, Wael; Wirth, Marisa A.; Schulz-Bull, Detlef Kreikemeyer, Bernd	FRONTIERS IN MARINE SCIENCE, (10 DEC 2019) Vol. 6.	Non-relevant by full text	Paper discusses a novel technique to monitor the effects of herbicide on brackish proteo bacteria and bacterial communities measuring 16S rRNA genes in samples of water accompanied by total cell counts and using operational taxonomic units. Whilst informative techniques were used, these data are not relevant to an EU level Annex I ecotoxicological risk assessment according to the 1107/2009 data requirements.			
Stronger effects of Roundup than its active ingredient glyphosate in damselfly larvae.	Janssens Lizanne Stoks Robby	Aquatic toxicology (Amsterdam, Netherlands), (2017 Dec) Vol. 193, pp. 210-216. Electronic Publication Date: 31 Oct 2017 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Formulation tested contains POEA which is not present in the representative product in the EU renewal.			Y
Altered immune response of the rice frog Fejervarya limnocharis living in agricultural area with intensive herbicide utilization at Nan Province, Thailand.	Jantawongsri, K.; Thammachoti, P.; Kitana, J.; Khonsue, W.; Varanusupakul, P.; Kitana, N.; Khattapan Jantawongsri; Panupong Thammachoti; Jirarach Kitana; Wichase Khonsue; Pakorn Varanusupakul; Noppadon Kitana	Environment Asia (2015), Volume 8, Number 1, pp. 68-74, 32 refs. ISSN: 1906-1714 Published by: Society of Higher Education Institutes on Environment, Phutthamonthon URL (Availability): http://www.tshe.org/ea/pdf/vol8no1-09.pdf	Non-relevant by full text	Paper presents results of liver analyses from field collected frogs, in sites in Thailand where multiple pesticides have been used. Glyphosate was one of the chemicals used in the rice growing area, but no specific data relating to glyphosate that could be used in an EU level risk assessment is presented.			
Effect of pre-harvest glyphosate application on grain germination and emergence of winter wheat self-sown plants. Wpływ glifosatu stosowanego przed zbiorem na kiełkowanie ziarna i wschody samosiewow pszenicy ozimej.	Jaskulski, D.; Jaskulska, I.	Progress in Plant Protection (2011), Volume 51, Number 2, pp. 927-931, 13 refs. ISSN: 1427-4337 Published by: Instytut Ochrony Roslin (Institute of Plant Protection), Poznan URL (Availability): http://www.progress.plantprotection.pl/pliki/2011/P_PP_51_2_6	Non-relevant by full text	Roundup energy (450 SL) is the test substance in this study which is not the representative product for the renewal of glyphosate. The study is conducted in winter wheat, this is not a use on the representative GAP table for the renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Acute and chronic toxicity of four commonly used agricultural pesticides on the Asian common toad, <i>Bufo melanostictus</i> schneider	Jayawardena, U. A.; Navaratne, A. N.; Amerasinghe, P. H.; Rajakaruna, R. S.	Journal of the National Science Foundation of Sri Lanka, (2011) Vol. 39, No. 3, pp. 267-276. CODEN: JNSFFU. ISSN: 1391-4588.	Non-relevant by full text	Study was conducted with glyphosate product in Sri Lanka, determining the toxicity to the Asian common toad. Egg strands collected from a university park in Sri Lanka, whereupon the tadpoles were subsequently exposed up to 25 ppm glyphosate. Test concentrations were renewed weekly, with observations at 10 and 30 days on metamorphosis. 48hr LC50 values were determined for glyphosate. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			
Toxicity of agrochemicals to common hourglass tree frog (<i>Polypedates cruciger</i>) in acute and chronic exposure.	Jayawardena, U. A.; Rajakaruna, R. S.; Navaratne, A. N.; Amerasinghe, P. H.	International Journal of Agriculture and Biology (2010), Volume 12, Number 5, pp. 641-648, 39 refs. ISSN: 1560-8530 Published by: Friends Science Publishers, Faisalabad URL (Availability): http://www.fspublishers.org/ijab/past-issues/IJABVOL_12_NO_5/1.pdf	Non-relevant by full text	Conducted with glyphosate product in Sri Lanka, studies looks at the toxicity to the Common hourglass tree frog. Egg masses were collected from a university park in Sri Lanka, with tadpoles then exposed up to 1 ppm for a chronic test. Test concentrations were renewed weekly, observations made on metamorphosis. The material and methods lacks important information. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
Effects of agrochemicals on disease severity of <i>Acanthostomum burminis</i> infections (Digenea: Trematoda) in the Asian common toad, <i>Duttaphrynus melanostictus</i> .	Jayawardena, Uthpala A.; Rohr, Jason R.; Amerasinghe, Priyanti H.; Navaratne, Ayanthi N.; Rajakaruna, Rupika S. [Reprint Author]	BMC Zoology, (SEP 22 2017) Vol. 2. http://bmczool.biomedcentral.com/ . ISSN: 2056-3132. E-ISSN: 2056-3132.	Non-relevant by full text	Discusses results of exposure of nematode disease rates to multiple a.i. including a glyphosate formulation containing POEA. POEA containing formulations are not relevant to EU level risk assessment.			
Impact of glyphosate-resistant corn, glyphosate applications and tillage on soil nutrient ratios, exoenzyme activities and nutrient acquisition ratios.	Jenkins Michael B; Locke Martin A; McChesney Daniel S; Steinriede R Wade Reddy Krishna N	Pest management science, (2017 Jan) Vol. 73, No. 1, pp. 78-86. Electronic Publication Date: 12 Sep 2016 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Non-relevant by full text	Long term monitoring study that is not relevant for ecotoxicological risk assessment for Annex I glyphosate renewal.			
Species Sensitivity Distribution (SSD) - application in environmental risk assessment of pesticides in European rivers. Distribuce citlivosti druhu (Species Sensitivity Distribution - SSD) - využití pro hodnocení rizik pesticidů v evropských řekách.	Jesenska, S.; Brabec, K.; Blaha, L.	Bulletin - VURH Vodnany (2011), Volume 47, Number 3, pp. 29-38, 14 refs. ISSN: 0007-389X Published by: University South Bohemia Ceske Budejovice, Research Institute of Fish Culture and Hydrobiology, Vodnany URL (Availability): http://www.frov.jcu.cz/files	Non-relevant by full text	Data for glyphosate was used in a SSD model to look at the river ecosystem (in Belgium). Concentrations were monitored at locations with the river basin and used in the model. Results were not relevant for the risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Influence of commonly used pesticides on acute toxicity to earthworm <i>Eisenia fetida</i> and alteration of antioxidant enzyme activities.	Jiang JinLin; Shan ZhengJun; Zhou JunYing; Bu YuanQing; Tian Feng; Jiang, J. L.; Shan, Z. J.; Zhou, J. Y.; Bu, Y. Q.; Tian, F.	Journal of Agro-Environment Science (2017), Volume 36, Number 3, pp. 466-473, 26 refs. ISSN: 1672-2043 Published by: The Editorial Board of Journal of Agro-Environment Science, Tianjin URL (Availability): http://www.aes.org.cn/nyhjxxxben/ch/read/view_ab	Non-relevant by full text	Acute toxicity to earthworms is not a data requirement in the EU level Annex I ecotoxicology risk assessment.			
Sub-lethal effects of herbicides penoxsulam, imazamox, fluridone and glyphosate on Delta Smelt (<i>Hypomesus transpacificus</i>).	Jin Jiali Kurobe Tomofumi Ramirez-Duarte Wilson F; Bolotaolo Melissa B; Lam Chelsea H; Stillway Marie E; Teh Swee J Pandey Pramod K Hung Tien-Chieh Zweig Leanna Caudill Jeffrey Lin Li	Aquatic toxicology (Amsterdam, Netherlands), (2018 Apr) Vol. 197, pp. 79-88. Electronic Publication Date: 1 Feb 2018 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Presented endpoints based on cellular levels of enzymes cannot be related to an Ecotoxicological risk assessment for Annex I renewal.			Y
Acute and chronic toxicity of glyphosate to native fish from San Luis province, Argentina	Jofre, D M; Enriz, R D; Alvarez, M A; Gimenez I; Jofre, M B; Giannini, F A	Current Topics In Toxicology. Vol. 11, pp. 49-54. 2015. ISSN: 0972-8228 Published by: Research Trends, T.C. 17/250(3) Chadiyara Road Trivandrum Kerala 695-012 India	Non-relevant by full text	The tested formulation contains POEA and is therefore not relevant to the MON 52276 representative formulation for the Annex I renewal.			
Roundup and amphibians: the importance of concentration, application time, and stratification.	Jones Devin K Hammond John I; Relyea Rick A	Environmental toxicology and chemistry, (2010 Sep) Vol. 29, No. 9, pp. 2016-25. Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Glyphosate product tests performed with larval amphibians (wood frog and American toads) in an outdoor mesocosms in the US. Up to 3 mg ae/L was applied at 0, 7 and 14 days to the mesocosm, and replicated. Egg masses were collected from nearby ponds and hatched in culture ponds with aged well-water. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Competitive stress can make the herbicide Roundup more deadly to larval amphibians	Jones, Devin K.; Hammond, John I.; Relyea, Rick A.	Environmental Toxicology and Chemistry, (2010) Vol. 30, No. 2, pp. 446-454. CODEN: ETOCDK. ISSN: 0730-7268.	Non-relevant by full text	This study assessed competition as a stressor in conjunction with Roundup treatment in an outdoor mesocosm (USA) containing different densities of tadpoles (green frogs, gray tree frogs, american bullfrogs). Glyphosate product was applied up to 3 mg ae/L for 7 days with replication. Egg masses were collected from nearby ponds and hatched in wading pools with aged well-water. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
Haemato-biochemical alterations in induced acute glyphosate (C3H8NO5P) intoxication in Kuroiler birds	Kalai, Kanika; Upadhyaya, Tirtha Nath; Pathak, Debesh Chandra; Roy, Dulal Chandra; Sarma, Satya; Saikia, Girindra Kumar	International Journal of Chemical Studies, (2018) Vol. 6, No. 4Pt.I, pp. 1-4. CODEN: IJCSRU. ISSN: 2321-4902.	Non-relevant by full text	Paper contains data that cannot be related to an EU level ecotoxicology risk assessment.			
Determination of the effect of some pesticides on honey bees.	Karahan, A.; Kutlu, M. A.; Karaca, I.	International Journal of Agriculture, Environment and Food Sciences (2018), Volume 2, Number 3, pp. 104-108, 42 refs. ISSN: 2618-5946 Published by: Gultekin Ozdemir, Diyarbakir URL (Availability): https://dergipark.org.tr/en/download/article-file/531630	Non-relevant by full text	No effects observed from glyphosate exposure on body movement, however, endpoint not relevant for an EU level Annex I ecotoxicology risk assessment.			
Synergistic effects of glyphosate formulation and parasite infection on fish malformations and survival	Kelly, David W; Poulin, Robert; Tompkins, Daniel M; Townsend, Colin R	Journal of applied ecology (2010), Volume 47, Number 2, pp. 498-504 ISSN: 0021-8901 Published by: Oxford, UK : Blackwell Publishing Ltd Source Note: 2010 Apr., v. 47, no. 2	Non-relevant by full text	Snails collected from River in New Zealand. GLY + POEA surfactant (diluted to 0.36 mg a.i./L), study looks at exposure to infection and GLY on spinal malformation and survival of juvenile fish, other study looks at influence of GLY conc on production of infection on survival of P.antipodarum snails. paper doesnt bring any data to the regulatory RA of GLY renewal.			Y
Comparative Study of Toxicological Impinge of Glyphosate And Atrazine (Herbicide) on Stress Biomarkers; Blood Biochemical and Haematological Parameters of the Freshwater Common Carp (Cyprinus carpio).	Khan, Ahsan [Reprint Author]; Shah, Nazish; Gul, Anum; Najmu-Us-Sahar; Ismail, Afshan; Muhammad; Aziz, Fawad; Farooq, Muhammad; Adnan, Muhammad; Rizwan, Muhammad	Polish Journal of Environmental Studies, (2016) Vol. 25, No. 5, pp. 1995-2001. http://www.pjoes.com . ISSN: 1230-1485. E-ISSN: 2083-5906.	Non-relevant by full text	Molecular and chemical observations are not relevant to traditional ecotoxicological risk assessment. Population level effects may not be inferred from such observations.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Phytotoxicity of Roundup Ultra 360 SL in aquatic ecosystems: Biochemical evaluation with duckweed (<i>Lemna minor</i> L.) as a model plant	Kielak, Elzbieta; Sempruch, Cezary; Mioduszevska, Halina; Kloczek, Jozef; Leszczynski, Bogumil	Pesticide biochemistry and physiology (2011), Volume 99, Number 3, pp. 237-243 ISSN: 0048-3575 Published by: Elsevier Inc. Source Note: 2011 Mar., v. 99, no. 3	Non-relevant by full text	Use of glyphosate product in a study on lemna to assess the impact on biomass and Chlorophyll content of plants. This study was performed in Poland. The paper does not contribute to the renewal of glyphosate in the EU.			Y
Toxic Effects of the Herbicide Roundup Regular on Pacific Northwestern Amphibians	King, Jeffery J; Wagner, RSteven	Northwestern Naturalist [Northwest. Nat.]. Vol. 91, no. 3, pp. 318-324. Dec 2010. ISSN: 1051-1733 DOI: 10.1898/NWN09-25.1 Published by: Society for Northwestern Vertebrate Biology, P.O. Box 22313 Seattle WA 98122 USA	Non-relevant by full text	Conducted in the US. Glyphosate product + POEA surfactant, used in a study to look at the effect on amphibians (collected from the wild, kept in aerated pond water until 24 hr after hatching), up to 5 mg/L, static tests, pH buffered with spring water, LC50 generated. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
Effects of glyphosate herbicide on the gastrointestinal microflora of Hawaiian green turtles (<i>Chelonia mydas</i>) Linnaeus.	Kittle Ronald P McDermid Karla J; Muehlstein Lisa Balazs George H	Marine pollution bulletin, (2018 Feb) Vol. 127, pp. 170-174. Electronic Publication Date: 7 Dec 2017 Journal code: 0260231. E-ISSN: 1879-3363. L-ISSN: 0025-326X.	Non-relevant by full text	Discusses a novel technique using isolated strains of bacteria from turtle guts to assess their sensitivity to glyphosate. Findings not relatable to an EU level ecotoxicology risk assessment for Annex I renewal.			
Agrichemicals chronically inhibit the cortisol response to stress in fish.	Koakoski Gessi; Ferreira Daiane; Oliveira Thiago Acosta; da Rosa Joao Gabriel Santos; de Abreu Murilo Sander Quevedo Rosmari Mezzalira; Gusso Darlan; Kreutz Luiz Carlos; Giacomini Ana Cristina Vendrameto; Fagundes Michele; Barcellos Leonardo Jose Gil Marq	Chemosphere, (2014 Oct) Vol. 112, pp. 85-91. Electronic Publication Date: 21 Apr 2014 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	End-points based on measured stress hormones are not relevant to an EU level Annex I ecotoxicology risk assessment for renewal.		Y	Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effect of glyphosate-based herbicide on hematological and hemopoietic parameters in common carp (<i>Cyprinus carpio</i> L).	Kondera E; Teodorczuk B; Lugowska K; Witeska M	Fish physiology and biochemistry, (2018 Jun) Vol. 44, No. 3, pp. 1011-1018. Electronic Publication Date: 14 Mar 2018 Journal code: 100955049. E-ISSN: 1573-5168. L-ISSN: 0920-1742.	Non-relevant by full text	End-points presented are not relevant to an EU level risk assessment for glyphosate renewal in the EU.			Y
Agricultural effects on amphibian parasitism: importance of general habitat perturbations and parasite life cycles.	Koprivnikar Janet Redfern Julia C	Journal of wildlife diseases, (2012 Oct) Vol. 48, No. 4, pp. 925-36. Journal code: 0244160. E-ISSN: 1943-3700. L-ISSN: 0090-3558.	Non-relevant by full text	Pond sampling / monitoring study performed in Canada. Not relatable to an EU level ecotoxicology risk assessment for Annex I renewal.			
Assessment of the effects of metribuzin, glyphosate, and their mixtures on the metabolism of the model plant <i>Lemna minor</i> L. applying metabolomics.	Kostopoulou Sofia Ntatsi Georgia Arapis Gerasimos Aliferis Konstantinos A	Chemosphere, (2020 Jan) Vol. 239, pp. 124582. Electronic Publication Date: 24 Aug 2019 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	The paper describes a metabolomics approach to establish the impact of glyphosate alone and mixtures with metribuzin on the metabolome of <i>lemna</i> . Novel approach to biomarker detection is not considered in an EU level assessment.			
Rodeo (TM) Herbicide Negatively Affects Blanchard's Cricket Frogs (<i>Acris blanchardi</i>) Survival and Alters the Skin-Associated Bacterial Community.	Krynak, Katherine L. [Reprint Author]; Burke, David J.; Benard, Michael F.	Journal of Herpetology, (SEP 2017) Vol. 51, No. 3, pp. 402-410. http://www.ssarherps.org/pages/JHinst.r.php . CODEN: JHERAH. ISSN: 0022-1511. E-ISSN: 1937-2418.	Non-relevant by full text	Uses a formulation that is not relevant to the EU renewal of Glyphosate. (RODEO)			Y
Genotoxicity assessment in the amphipod <i>Gammarus fossarum</i> by use of the alkaline Comet assay	Lacaze, Emilie; Geffard Olivier; Bony, Sylvie; Devaux, Alain	Mutation Research, Genetic Toxicology and Environmental Mutagenesis, (2010) Vol. 700, No. 1-2, pp. 32-38. CODEN: MRGMFL. ISSN: 1383-5718.	Non-relevant by full text	This study is the development of an assay. Endpoints cannot be used in the regulatory risk assessment of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Toxicity of four herbicide formulations with glyphosate on <i>Rhinella arenarum</i> (anura: bufonidae) tadpoles: B-esterases and glutathione S-transferase inhibitors.	Lajmanovich Rafael C Attademo Andres M; Peltzer Paola M; Junges Celina M; Cabagna Mariana C	Archives of environmental contamination and toxicology, (2011 May) Vol. 60, No. 4, pp. 681-9. Electronic Publication Date: 29 Jul 2010 Journal code: 0357245. E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Non-relevant by full text	Compared toxicity to tadpoles exposed to a range of glyphosate products up to 240 mg ae/L for 48 hrs, enzyme activity was measured. Tadpoles collected from the wild (non-agricultural areas in Argentina, acclimated for 48 hrs). LC50 generated with very high concentrations tested.			Y
Individual and Mixture Toxicity of Commercial Formulations Containing Glyphosate, Metsulfuron-Methyl, Bispyribac-Sodium, and Picloram on <i>Rhinella arenarum</i> Tadpoles.	Lajmanovich, Rafael C. [Reprint Author]; Junges, Celina M.; Attademo, Andres M.; Peltzer, Paola M.; Cabagna-Zenklusen, Mariana C.; Basso, Agustin	Water Air and Soil Pollution, (MAR 2013) Vol. 224, No. 3, pp. Article No.: 1404. http://www.springerlink.com/content/100344/ . CODEN: WAPLAC. ISSN: 0049-6979. E-ISSN: 1573-2932.	Non-relevant by full text	Formulation used in the testing is not the representative formulation for the Annex I renewal. Also difficult to relate the cellular and molecular level endpoints to an Annex I ecotoxicology risk assessment.			Y
Determination of root length reduction (EC50) by a glyphosate formulation using lettuce and wheat as biological indicator species. Original Title: Determinacion de reduccion del crecimiento radical (CE50) por una formulacion de glifosato utilizando lechug	Lallana, Maria del C.; Natalia Foti, Maria; Lallana, Victor H.; Elizalde, Jose H. I.; Billard, Cristina E.	Revista de la Facultad de Ciencias Agrarias Universidad Nacional de Cuyo, (JUN 2013) Vol. 45, No. 1, pp. 143-151. http://revista.fca.uncu.edu.ar . ISSN: 1853-8665. E-ISSN: 1853-8665.	Non-relevant by full text	Endpoints presented were not generated using a test design that reflects use in the field and as such is not considered relevant / relatable to an EU level risk assessment for PPP Annex I renewal.			
Accumulation and detoxication responses of the gastropod <i>Lymnaea stagnalis</i> to single and combined exposures to natural (cyanobacteria) and anthropogenic (the herbicide RoundUp®) Flash stressors.	Lance Emilie Desprat Julia Holbech Bente Frost; Lawton Linda A; Edwards Christine Gerard Claudia; Bormans Myriam Wiegand Claudia	Aquatic toxicology (Amsterdam, Netherlands), (2016 Aug) Vol. 177, pp. 116-24. Electronic Publication Date: 23 May 2016 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.			Y
Effects of the glyphosate-based herbicide Roundup WeatherMax® on metamorphosis of wood frogs (<i>Lithobates sylvaticus</i>) in natural wetlands.	Lancot C Robertson C; Navarro-Martin L; Edge C; Melvin S D; Houlahan J; Trudeau V L	Aquatic toxicology (Amsterdam, Netherlands), (2013 Sep 15) Vol. 140-141, pp. 48-57. Electronic Publication Date: 21 May 2013 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Roundup WeatherMAX contains surfactants that are not relevant to the EU level renewal of glyphosate onto Annex I.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of glyphosate-based herbicides on survival, development, growth and sex ratios of wood frog (<i>Lithobates sylvaticus</i>) tadpoles. II: agriculturally relevant exposures to Roundup WeatherMax® and Vision® under laboratory conditions.	Lancot C; Navarro-Martin L; Robertson C; Trudeau V L Park B Jackman P Pauli B D	Aquatic toxicology (Amsterdam, Netherlands), (2014 Sep) Vol. 154, pp. 291-303. Electronic Publication Date: 28 May 2014 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	The tested formulation contains POEA and is therefore not relevant to the MON 52276 representative formulation for the Annex I renewal.		Y (重複)	Y
Dose-dependent effects of a glyphosate commercial formulation - Roundup® UltraMax - on the early zebrafish embryogenesis.	Lanzarin Germano A B Felix Luis M Santos Dercia Venancio Carlos A S Monteiro Sandra M	Chemosphere, (2019 May) Vol. 223, pp. 514-522. Electronic Publication Date: 12 Feb 2019 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Paper concerns a Roundup formulation that is not the representative formulation for the Annex I renewal.			Y
Effects of in vivo exposure to Roundup® on immune system of <i>Caiman latirostris</i> .	Latorre Maria Agustina Lopez Gonzalez Evelyn Cecilia; Larriera Alejandro; Poletta Gisela Laura; Siroski Pablo Ariel	Journal of immunotoxicology, (2013 Oct-Dec) Vol. 10, No. 4, pp. 349-54. Electronic Publication Date: 18 Dec 2012 Journal code: 101201960. E-ISSN: 1547-6901. L-ISSN: 1547-691X.	Non-relevant by full text	This study provided blood chemistry analysis for <i>Caiman</i> exposed to Roundup for long periods. These data are not considered to be relevant to the EU level ecotoxicology risk assessment for Annex I renewal. Roundup used also contains POEA, which is a surfactant system not present in the representative formulation.			
Level of UV-B radiation influences the effects of glyphosate-based herbicide on the spotted salamander.	Levis Nicholas A Johnson Jarrett R	Ecotoxicology (London, England), (2015 Jul) Vol. 24, No. 5, pp. 1073-86. Electronic Publication Date: 21 Mar 2015 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	Study investigates the effect on different UV light regimes on the effects on glyphosate on salamanders. As no specific effects and concentrations related to glyphosate alone are not mentioned, the findings are not relevant to an EU level renewal assessment for annex I.			Y
NonaX80X90adaptive phenotypic plasticity: the effects of terrestrial and aquatic herbicides on larval salamander morphology and swim speed	Levis, Nicholas A; Jarrett R Johnson; Michael L Collyer; Mitchell L Schooler	Biological journal of the Linnean Society (2016), Volume 118, Number 3, pp. 569-581 ISSN: 0024-4066 Published by: John Wiley & Sons, Ltd Source Note: 2016 July, v. 118, no. 3	Non-relevant by full text	Adaptive phenotypic plasticity is not an endpoint / observed parameter considered in the EU level ecotox risk assessment for Annex I renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Metabolic profiling of goldfish (<i>Carassius auratus</i>) after long-term glyphosate-based herbicide exposure.	Li Ming-Hui; Ruan Ling-Yu; Zhou Jin-Wei; Fu Yong-Hong; Jiang Lei; Zhao He Wang Jun-Song	Aquatic toxicology (Amsterdam, Netherlands), (2017 Jul) Vol. 188, pp. 159-169. Electronic Publication Date: 13 May 2017 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Metabolomic approaches to assessing the fate of pesticides in organisms looks specifically at cellular and molecular level based endpoints that are not used in the EU level ecotoxicology risk assessment for Annex I renewal.			Y
Response of <i>Nitzschia amphicetens</i> in growth and kinestase to glyphosate original powder	Li, Pei-lin; Zhi, Chong-yuan; Li, Ya; Yang, Yujia; Liu, Chao; Yi, Tingting	Nongyao, (2015) Vol. 54, No. 2, pp. 108-111. CODEN: NONGFP. ISSN: 1006-0413.	Non-relevant by full text	Based on Roundup Original which contains POEA which is not relevant at EU level for MON 52276 renewal. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the renewal.			
Effects of herbicides application on allelopathic potential of <i>Eupatorium catartum</i> .	Li, Qinfen; Li, Guangyi [Reprint Author]; Liu, Zhendi; Deng, Xiao; Zou, Yukun	Allelopathy Journal, (JAN 2013) Vol. 31, No. 1, pp. 139-146. ISSN: 0971-4693. E-ISSN: 0974-1240.	Non-relevant by full text	Observations caused by mixture of compounds / potentially causal factors and thus not attributable to a substance of concern (e.g. mixture toxicity).			Y
Acute exposure of glyphosate-based herbicide induced damages on common carp organs via heat shock proteins-related immune response and oxidative stress	Li, Yuan Yuan; Ding, Weikai; Li, Xiaoyu	Toxin Reviews, (2019) pp. Ahead of Print. CODEN: TROEC6. ISSN: 1556-9543.	Non-relevant by full text	Formulation is not the representative formulation for the ANNEX I renewal of glyphosate. As the identity of the powder and the form in which it was supplied (salt type, to establish acid equivalence content) cannot be confirmed. Co-formulants are also unknown.			
The toxicity of Roundup® 360 SL formulation and its main constituents: glyphosate and isopropylamine towards non-target water photoautotrophs.	Lipok Jacek Studnik Hanna; Gruyaert Steven	Ecotoxicology and environmental safety, (2010 Oct) Vol. 73, No. 7, pp. 1681-8. Electronic Publication Date: 1 Sep 2010 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Uses glyphosate product, study looking at impact on marine microbial (algae) communities (14 d old log-phase cultures used), exposed up to 3mM of GLY. EC50 generated. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Size-controlled preparation of hollow silica spheres and glyphosate release	Liu, Chun; Yin, Heng-bo; Wang, Ai-li; Wu, Zhan-ao; Wu, Gang; Jiang, Tao; Shen, Yutang; Jiang, Ting-shun	Transactions of Nonferrous Metals Society of China (2012), 22(5), 1161-1168 CODEN: TNMCEW; ISSN: 1003-6326	Non-relevant by full text	This paper relates to the development of a silica capsule. Glyphosate is mentioned as the example chemical that demonstrates increased release rate with thinning of the capsule wall. Not relevant for 2022 ecotox renewal risk assessment.			
Effect of pesticides on soil microbial community.	Lo Chi-Chu	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2010 Jul) Vol. 45, No. 5, pp. 348-59. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	Conducted in China. Review of toxicity studies to look at the effect of glyphosate and other chemistry to soil microflora. As it's a review of other data it doesn't bring any specific endpoint to the Regulatory risk assessment of glyphosate renewal.			
LETHAL CONCENTRATION OF GLYPHOSATE FOR JUVENILES OF CURIMATA-PACU. Original Title: CONCENTRACAO LETAL DO GLIFOSATO PARA JUVENIS DE CURIMATA-PACU.	Lopes da Silva, Emilia Tatiane [Reprint Author]; Fernandes Dias, Maria Leticia; Pedreira, Marcelo Mattos; dos Santos, Jose Barbosa	Boletim Do Instituto De Pesca, (2016) Vol. 42, No. 4, pp. 759-764. ISSN: 0046-9939. E-ISSN: 1678-2305.	Non-relevant by full text	Concerns a formulation of Glyphosate (ATANOR®) that is not the representative formulation for the Annex I renewal.			
Toxicity induced by glyphosate and glyphosate-based herbicides in the zebrafish hepatocyte cell line (ZF-L).	Lopes Fernanda Moreira Sandrini Juliana Zomer; Souza Marta Marques	Ecotoxicology and environmental safety, (2018 Oct 30) Vol. 162, pp. 201-207. Electronic Publication Date: 11 Jul 2018 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	The formulated product used in the test contains MON 2139 which contains POEA (MON0818). Therefore findings are not relevant to the EU level renewal as are not representative formulation for the Annex I renewal.			Y
Glyphosate Adversely Affects Danio rerio Males: Acetylcholinesterase Modulation and Oxidative Stress.	Lopes Fernanda Moreira; da Rosa Carlos Eduardo Caldas Sergiane Souza; Primel Ednei Gilberto	Zebrafish, (20170400) Vol. 14, No. 2, pp. 97-105. Electronic Publication Date: 1 Dec 2016 Journal code: 101225070. E-ISSN: 1557-8542. L-ISSN: 1545-8547.	Non-relevant by full text	Endpoints not relatable to an EU level ecotoxicology risk assessment for Annex I renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effect of glyphosate on the sperm quality of zebrafish <i>Danio rerio</i> .	Lopes Fernanda Moreira; da Rosa Carlos Eduardo Varela Junior Antonio Sergio Corcini Carine Dahl da Silva Alessandra Cardoso Guazzelli Vitoria Gasperin; Tavares Georgia	Aquatic toxicology (Amsterdam, Netherlands), (2014 Oct) Vol. 155, pp. 322-6. Electronic Publication Date: 12 Jul 2014 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Endpoint not used in EU level ecotoxicology risk assessment.	Y	Y	Y
Potential risks to freshwater aquatic organisms following a silvicultural application of herbicides in Oregon's Coast Range.	Louch Jeff; Allen Ginny Danehy Robert J; Ice George Tatum Vickie Hale V Cody McDonnell Jeffrey	Integrated environmental assessment and management, (2017 Mar) Vol. 13, No. 2, pp. 396-409. Electronic Publication Date: 18 Jul 2016 Journal code: 101234521. E-ISSN: 1551-3793. L-ISSN: 1551-3777.	Non-relevant by full text	This is a specific non-EU monitoring study that cannot be related to an EU level ecotoxicology risk assessment for Annex I renewal.			
Effects of glyphosate and 2,4-D mixture on freshwater phytoplankton and periphyton communities: a microcosms approach	Lozano, V. L. [Reprint Author]; Vinocur, A.; Sabio y Garcia, C. A.; Allende, L.; Cristos, D. S.; Rojas, D.; Wolansky, M.; Pizarro, H.	Ecotoxicology and Environmental Safety, (FEB 2018) Vol. 148, pp. 1010-1019. http://www.journals.elsevier.com/ecotoxicology-and-environmental-safety/#description . CODEN: EESADV. ISSN: 0147-6513. E-ISSN: 1090-2414.	Non-relevant by full text	The focus of the study was on phytoplankton and periphyton communities. However, no information on the source and history of the phytoplankton and periphyton communities are given. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment. (The glyphosate formulation Glifosato Atanor® was used in the microcosm study). In addition, no regulatory useful endpoint was derived.			Y
Effects of 4-nonylphenol and formulations of five pesticides: cypermethrin, deltamethrin, glyphosate, imidacloprid and mancozeb on growth of Atlantic salmon (<i>Salmo salar</i> L.) during parr-smolt transformation.	Lyons, M. [Reprint Author]; MacKeigan, K.; Fairchild, W. L.; Burridge, L. E.	Canadian Technical Report of Fisheries and Aquatic Sciences, (2018) Vol. 3265, pp. 1-42. CODEN: CTRSDR. ISSN: 0706-6457. E-ISSN: 0706-6570.	Non-relevant by full text	Fish exposed to a glyphosate formulation that is not the representative formulation for the Annex I renewal.			
Alteration in the cytokine levels and histopathological damage in common carp induced by glyphosate.	Ma Junguo Li Xiaoyu	Chemosphere, (2015 Jun) Vol. 128, pp. 293-8. Electronic Publication Date: 3 Mar 2015 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Endpoints not relatable to an EU level risk assessment for Annex I renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Immunological and histopathological responses of the kidney of common carp (<i>Cyprinus carpio</i> L.) sublethally exposed to glyphosate.	Ma Junguo; Bu Yanzhen Li Xiaoyu	Environmental toxicology and pharmacology, (2015 Jan) Vol. 39, No. 1, pp. 1-8. Electronic Publication Date: 18 Nov 2014 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.			
Biochemical and molecular impacts of glyphosate-based herbicide on the gills of common carp.	Ma Junguo; Zhu Jingyi; Wang Wanying; Ruan Panpan Rajeshkumar Sivakumar Li Xiaoyu	Environmental pollution (Barking, Essex : 1987), (2019 Jun 12) Vol. 252, No. Pt B, pp. 1288-1300. Electronic Publication Date: 12 Jun 2019 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Paper discusses biochemical and molecular impacts that are not relatable to an EU level RA for Annex I renewal			Y
Side-effects of herbicides applied in soybean <i>Trichogramma pretiosum</i> . Efeitos secundarios de herbicidas aplicados em soja sobre <i>Trichogramma pretiosum</i> .	Magano, D. A.; Krolow, I. R. C.; Gruetzmacher, A. D.; Panozzo, L. E.; Armas, F. S. de; Zimmer, M.; de Armas, F. S.	Pesquisa Agropecuaria Gaucha (2013), Volume 19, Number 1/2, pp. 69-80, 23 refs. ISSN: 0104-9070 Published by: Fundacao Estadual de Pesquisa Agropecuaria (FEPAGRO), Porto Alegre URL (Availability): http://www.fepagro.rs.gov.br/lista/122/PAG	Non-relevant by full text	The formulations used that contain glyphosate were Glyphosate Atanor and Roundup Original. The Roundup formulation contains POEA and is therefore not relevant for the EU. Concerning ATANOR, this is not the representative formulation and it is difficult to relate the observed effects with the ecotoxicology risk assessment for EU Annex I renewal of MON 52276.			
Understanding the combined influence of fine sediment and glyphosate herbicide on stream periphyton communities.	Magbanua Francis S Townsend Colin R; Hageman Kimberly J; Lange Katharina; Lear Gavin; Lewis Gillian D; Matthaei Christoph D	Water research, (2013 Sep 15) Vol. 47, No. 14, pp. 5110-20. Electronic Publication Date: 5 Jun 2013 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Non-relevant by full text	This study investigated the combination of sediment and glyphosate effects on an mesocosm community. Results not relatable to an EU level ecotoxicological risk assessment.			
Individual and combined effects of fine sediment and the herbicide glyphosate on benthic macroinvertebrates and stream ecosystem function	Magbanua, Francis S; Townsend, Colin R; Hageman, Kimberly J; Matthaei, Christoph D	Freshwater biology (2013), Volume 58, Number 8, pp. 1729-1744 ISSN: 0046-5070 Published by: Blackwell Scientific Publications Source Note: 2013 Aug., v. 58, no. 8	Non-relevant by full text	Paper describes a specific multiple mesocosm study conducted in New Zealand using an undefined source of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Specific proteomic response of <i>Unio pictorum</i> mussel to a mixture of glyphosate and microcystin-LR.	Malecot Melodie Guevel Blandine; Pineau Charles; Holbech Bente Frost; Bormans Myriam; Wiegand Claudia	Journal of proteome research, (2013 Nov 01) Vol. 12, No. 11, pp. 5281-92. Electronic Publication Date: 9 Sep 2013 Journal code: 101128775. E-ISSN: 1535-3907. L-ISSN: 1535-3893.	Non-relevant by full text	Observed findings are not relatable to an EU level ecotoxicological risk assessment for Annex I purposes.			
Effects of Glyphosate-, Glufosinate- and Flazasulfuron-Based Herbicides on Soil Microorganisms in a Vineyard.	Mandl Karin; Cantelmo Clemens; Faber Florian; Friedrich Barbara Cantelmo Clemens; Gruber Edith; Zaller Johann G	Bulletin of environmental contamination and toxicology, (2018 Nov) Vol. 101, No. 5, pp. 562-569. Electronic Publication Date: 18 Sep 2018 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861. Report No.: PMC-PMC6223855.	Non-relevant by full text	The product used was Roundup Powerflex, which is based on MON 79351 that contains 47.6% acid equivalence, and not MON 52276. Endpoints based on bacterial CFUs are difficult to relate to an ecotoxicological Annex I risk assessment. The work was also conducted in a vineyard that had a history of other pesticides being used. As identified by the Author, this cannot be excluded as having influenced the findings.			
Toxicity in fishes of herbicides formulated with glyphosate	Maria, Alvarez; Gimenez, Isabel T.; Hugo, Saitua; Enriz, Ricardo D.; Giannini, Fernando A.	Acta Toxicologica Argentina, (2012) Vol. 20, No. 1, pp. 5-13. CODEN: ATARFL. ISSN: 1851-3743.	Non-relevant by full text	Two formulations and a test solution prepared using technical material were used. The two formulations were glaxoxan and Roundup. The Roundup contains POEA and therefore is not relevant to the EU. The Glacoxan is a home and garden use formulation that is not related to the representative formulation. It is therefore not relevant to an EU level risk assessment for the Annex I renewal.			
Evaluation of glyphosate effect concentration to control <i>Eichhornia crassipes</i> and <i>Salvinia</i> sp. Avaliacao da concentracao de efeito do glifosato para controle de <i>Eichhornia crassipes</i> e <i>Salvinia</i> sp.	Maria, M. A.; Lange, L. C.; Castro, S. R.; Soares, A. C.; Meyer, S. T.	Engenharia Sanitaria e Ambiental (2018), Volume 23, Number 5, pp. 881-889, 22 refs. ISSN: 1413-4152 DOI: 10.1590/s1413-41522018178366 Published by: ABES (Brazilian Association of Sanitary and Environmental Engineering) URL (Availability): http://www.sciel	Non-relevant by full text	On translated paper review, it is apparent that the study was conducted with a formulation (Roundup Original) that contains POEA - uncertain if observed effects were due to product or down to the action of POEA. POEA is not in the Annex I representative formulation and therefore these findings are not relevant to the ecotoxicology risk assessment for renewal.			
A preliminary assessment of the response of a native reptile assemblage to spot-spraying invasive Bitou Bush with glyphosate herbicide.	Martin, Leigh J. [Reprint Author]; Murray, Brad R.	Ecological Management & Restoration, (JAN 2013) Vol. 14, No. 1, pp. 59-62. http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1442-8903 . ISSN: 1442-7001. E-ISSN: 1442-8903.	Non-relevant by full text	NON-EU long term monitoring site, therefore non-relatable to EU level ANNEX I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Oversowing or resowing of subalpine grassland appointed after the dynamics of floristic composition.	Marusca, T.	Romanian Journal of Grassland and Forage Crops (2017), Number 15, pp. 45-55, 6 refs. ISSN: 2068-3065 Published by: University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca URL (Availability): http://www.ropaj.org	Non-relevant by full text	Study describes ecological succession and not specific effects of glyphosate on NTOs, therefore not relevant to EU level Annex ecotoxicology risk assessment.			
Effects of sub-lethal glyphosate concentrations on growth and photosynthetic performance of non-target species <i>Bolboschoenus maritimus</i> .	Mateos-Naranjo E Perez-Martin A	Chemosphere, (2013 Nov) Vol. 93, No. 10, pp. 2631-8. Electronic Publication Date: 22 Oct 2013 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	End-points not considered relevant to an EU level risk assessment (ecotoxicology) for Annex I renewal.			
Ecotoxicological hazard of a mixture of glyphosate and aminomethylphosphonic acid to the mussel <i>Mytilus galloprovincialis</i> (Lamarck 1819).	Matozzo Valerio; Masiero Luciano; Marin Maria Gabriella Munari Marco Finos Livio	Scientific reports, (2019 Oct 04) Vol. 9, No. 1, pp. 14302. Electronic Publication Date: 4 Oct 2019 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC6778070.	Non-relevant by full text	End-points based on enzyme levels cannot be related to the EU level Annex I risk assessment.			
Ecotoxicological risk assessment for the herbicide glyphosate to non-target aquatic species: A case study with the mussel <i>Mytilus galloprovincialis</i>	Matozzo, Valerio; Federico Ferraccioli; Iole Maria Di Gangi; Jacopo Fabrello; Livio Finos; Luciano Masiero; Paolo Pastore; Sara Bogialli	Environmental pollution (2017) ISSN: 0269-7491 Published by: Elsevier Ltd Source Note: 2017,	Non-relevant by full text	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.			Y
Ecotoxicological risk assessment for the herbicide glyphosate to non-target aquatic species: A case study with the mussel <i>Mytilus galloprovincialis</i> .	Matozzo Valerio Fabrello Jacopo; Masiero Luciano Ferraccioli Federico Finos Livio Pastore Paolo; Di Gangi Iole Maria; Bogialli Sara	Environmental pollution (Barking, Essex : 1987), (2018 Feb) Vol. 233, pp. 623-632. Electronic Publication Date: 5 Nov 2017 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	No control data are presented. The concept of up and down-regulation of genes following exposure to glyphosate within the context of a risk assessment is not relatable to the EU renewal. The purity of the test substance is not presented so dosing cannot be confirmed. The environmental conditions of the exposure phase are not presented other than salinity and temperature. No positive control included.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of aminomethylphosphonic acid, the main breakdown product of glyphosate, on cellular and biochemical parameters of the mussel <i>Mytilus galloprovincialis</i>	Matozzo Valerio Marin Maria Gabriella; Masiero Luciano; Tremonti Martina; Biamonte Sara; Viale Silvia Finos Livio Lovato Giulio; Pastore Paolo; Bogialli Sara	Fish & shellfish immunology, (2018 Dec) Vol. 83, pp. 321-329. Electronic Publication Date: 12 Sep 2018 Journal code: 9505220. E-ISSN: 1095-9947. L-ISSN: 1050-4648.	Non-relevant by full text	Cellular level parameters discussed in paper, with endpoints that are not relevant to an Annex I renewal from ecotoxicology perspective.			Y
Glyphosate affects haemocyte parameters in the clam <i>Ruditapes philippinarum</i> .	Matozzo Valerio Zampieri Carlo; Marin Maria Gabriella Munari Marco	Marine environmental research, (2019 Apr) Vol. 146, pp. 66-70. Electronic Publication Date: 21 Mar 2019 Journal code: 9882895. E-ISSN: 1879-0291. L-ISSN: 0141-1136.	Non-relevant by full text	Paper contains data that cannot be related to an EU level ecotoxicology risk assessment.			Y
Herbicide application during pasture renewal initially increases root turnover and carbon input to soil in perennial ryegrass and white clover pasture	McNally, Samuel R; Daniel C Laughlin; Johan Six; Louis A Schipper; Mike B Dodd; Susanna Rutledge	Plant and soil (2017), Volume 412, Number 1-2, pp. 133-142 ISSN: 0032-079X Published by: Springer International Publishing Source Note: 2017 Mar., v. 412, no. 1-2	Non-relevant by full text	Looks at root turnover as a means of sequestering carbon into soils. No specific endpoints useable in ecotoxicology EU level risk assessment for EU Annex I renewal.			
Exposure of <i>C. elegans</i> eggs to a glyphosate-containing herbicide leads to abnormal neuronal morphology.	McVey Kenneth A Snapp Isaac B Johnson Megan B Negga Rekek Pressley Areal S; Fitsanakis Vanessa A	Neurotoxicology and teratology, (2016 May-Jun) Vol. 55, pp. 23-31. Electronic Publication Date: 26 Mar 2016 Journal code: 8709538. E-ISSN: 1872-9738. L-ISSN: 0892-0362. Report No.: NLM-NIHMS774353 [Available on 05/01/17]; NLM-PMC4884470 [Available on 05/0	Non-relevant by full text	The article does not report results, which can be used for risk assessment and information is insufficient to transfer values into such determinants.			
Impact of glyphosate on microbial attributes of soil planted with two species of passion fruit.	Medeiros, E. V. de; Notaro, K. de A.; Bezerra, C. B.; Andrade, A. R. S. de; Duda, G. P.; de A. Notaro, K.; de Medeiros, E. V.; de Andrade, A. R. S.	Revista Caatinga (2014), Volume 27, Number 1, pp. 1-8, 29 refs. ISSN: 0100-316X Published by: Universidade Federal Rural do Semi-Arido, Rio Grande do Norte URL (Availability): http://periodicos.ufersa.edu.br/revistas/index.php/sistema/article/view/2834/p	Non-relevant by full text	Non-EU soil based comparative experiment to establish the impact of glyphosate on bacterial populations in soil for two different species of passion fruit in Brazil. The test design was described without specific detail on the amount of glyphosate being applied so any impacts could not be related to exposure. Therefore findings cannot be related to an EU level risk assessment for Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Impact of Water Pollution by Herbicides Zenkor and Roundup on Metabolism in Liver of Fishes of the Fam. Cyprinidae.	Mekhed, O. B. [Reprint Author]; Zhydenko, A. A.	Hydrobiological Journal, (2013) Vol. 49, No. 5, pp. 74-80. http://www.dl.begellhouse.com/journals/38cb2223012b73f2.html . CODEN: HYBJA7. ISSN: 0018-8166. E-ISSN: 1943-5991.	Non-relevant by full text	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.			
Subcellular energy balance of <i>Odontesthes bonariensis</i> exposed to a glyphosate-based herbicide.	Menendez-Helman Renata J Miranda Leandro A Dos Santos Afonso Maria Salibian Alfredo	Ecotoxicology and environmental safety, (2015 Apr) Vol. 114, pp. 157-63. Electronic Publication Date: 29 Jan 2015 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Molecular level results that are not relatable to an EU level ecotoxicology risk assessment.			Y
Reproductive and toxicological impacts of herbicides used in Eucalyptus culture in Brazil on the parasitoid <i>Palmistichus elaeisis</i> (Hymenoptera: Eulophidae)	MENEZES, C W G; SOARES, M A; SANTOS, J B; ASSIS JUNIOR, S L; FONSECA, A J; ZANUNCIO, J C	Weed research (2012), Volume 52, Number 6, pp. 520-525 ISSN: 0043-1737 Published by: Blackwell Publishing Ltd Source Note: 2012 Dec., v. 52, no. 6	Non-relevant by full text	Article not investigating properties of the active substance glyphosate. The articles does not cover any data requirement under EC Regulation 1107/2009.			Y
Acetylcholinesterase activity in the freshwater shrimp <i>Caridina nilotica</i> as a biomarker of Roundup (R) herbicide pollution of freshwater systems in South Africa.	Mensah, P. K. [Reprint Author]; Muller, W. J.; Palmer, C. G.	Water Science and Technology, (2012) Vol. 66, No. 2, pp. 402-408. CODEN: WSTED4. ISSN: 0273-1223.	Non-relevant by full text	Formulation used in the study contains POEA that is not relevant to the EU renewal.			
Using growth measures in the freshwater shrimp <i>Caridina nilotica</i> as biomarkers of Roundup registered pollution of South African freshwater systems	Mensah, PK; Muller, WJ; Palmer, CG	Physics and Chemistry of the Earth, Parts A/B/C [Phys. Chem. Earth (A,B,C)]. Vol. 50, pp. 262-268. 2012. ISSN: 1474-7065 DOI: 10.1016/j.pce.2012.08.003 Published by: Elsevier B.V., The Boulevard Kidlington Oxford OX5 1GB United Kingdom	Non-relevant by full text	The formulation is based on MON 2139, which contains MON 0818 (that includes POEA) which is not relevant for the EU representative formulation. The confounding effects of POEA on the results cannot be excluded as no glyphosate technical grade only treatments were included, therefore findings are considered relevant to EU level ecotoxicology risk assessment for Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The acute and chronic effect of Roundup herbicide on histopathology and enzymatic antioxidant system of <i>Oncorhynchus mykiss</i> .	Meshkini, S.; Rahimi-Arnaei, M.; Tafi, A. A.	International Journal of Environmental Science and Technology (2019), Volume 16, Number 11, pp. 6847-6856, 34 refs. ISSN: 1735-1472 DOI: 10.1007/s13762-018-2095-y Published by: Springer Berlin, Heidelberg	Non-relevant by full text	Roundup was used which contains POEA. This is not the representative formulation for the Annex I renewal.			
Effects of cypermethrin (pyrethroid), glyphosate and chlorpyrifos (organophosphorus) on the endocrine and immune system of <i>Salvator merianae</i> (Argentine tegu).	Mestre Ana P Amavet Patricia S; Vanzetti Agustin I Moleon Ma Soledad; Parachu Marco Ma Virginia; Siroski Pablo A Poletta Gisela L	Ecotoxicology and environmental safety, (2019 Mar) Vol. 169, pp. 61-67. Electronic Publication Date: 9 Nov 2018 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Formulation of glyphosate considered in the paper is not the representative formulation being considered for the Annex I renewal in EU.			
Toxic, cytotoxic, and genotoxic effects of a glyphosate formulation (Roundup®SL-Cosmoflux® 411F) in the direct-developing frog <i>Eleutherodactylus johnstonei</i> .	Meza-Joya Fabio Leonardo Ramirez-Pinilla Martha Patricia; Fuentes-Lorenzo Jorge Luis	Environmental and molecular mutagenesis, (2013 Jun) Vol. 54, No. 5, pp. 362-73. Electronic Publication Date: 26 Apr 2013 Journal code: 8800109. E-ISSN: 1098-2280. L-ISSN: 0893-6692.	Non-relevant by full text	Study is conducted on a formulation of glyphosate that is not the representative formulation in the EU.	Y	Y	Y
Effects of a glyphosate-based herbicide and predation threat on the behaviour of agile frog tadpoles.	Miko Zsanett Ujszegi Janos Gal Zoltan Hettyey Attila	Ecotoxicology and environmental safety, (2017 Jun) Vol. 140, pp. 96-102. Electronic Publication Date: 27 Feb 2017 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	The results of the study are not based on direct toxic effects of glyphosate to tadpoles, but are based on the interactive effects in the presence of predators. Endpoints of this type are not used in EU level risk assessment for Annex I renewal purposes.			Y
Standardize or Diversify Experimental Conditions in Ecotoxicology? A Case Study on Herbicide Toxicity to Larvae of Two Anuran Amphibians.	Miko Zsanett; Ujszegi Janos; Gal Zoltan; Hettyey Attila Ujszegi Janos Gal Zoltan	Archives of environmental contamination and toxicology, (2017 Nov) Vol. 73, No. 4, pp. 562-569. Electronic Publication Date: 28 Jun 2017 Journal code: 0357245. E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Non-relevant by full text	Formulation Glyphogan Classic used in the study contains POEA which is not relevant to an EU level risk assessment for the representative formulation MON 52276 that does not contain POEA.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The effects of glyphosate and AMPA on the mediterranean mussel <i>Mytilus galloprovincialis</i> and its microbiota.	Iori S; Rovere G Dalla; Smits M; Ferrareso S S; Babbucci M; Garro E; Carraro L; Cardazzo B; Patarnello T Ezzat L Marin M G; Masiero L; Fabrello J; Matozzo V Bargelloni L Milan M	Environmental research, (2019 Dec 03) Vol. 182, pp. 108984. Electronic Publication Date: 3 Dec 2019 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Non-relevant by full text	Paper discusses the effects of glyphosate at the molecular level which not used in an EU level assessment or renewal.			
Validating buccal swabbing as a minimal-invasive method to detect pesticide exposure in squamate reptiles.	Mingo Valentin Leeb Christoph; Bruhl Carsten Fahl Ann-Katrin Lotters Stefan; Wagner Norman	Chemosphere, (2019 Aug) Vol. 229, pp. 529-537. Electronic Publication Date: 3 May 2019 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	This paper describes a novel approach to taking samples from wall lizards for subsequent enzymatic analysis for the detection of pesticide effects. No data were presented that could be used in an EU level RA for renewal. Non representative formulation.			Y
Evaluation of cytotoxic effects of atrazine and glyphosate herbicides on <i>Biomphalaria glabrata</i> snails.	Mona, M. H.; Gaafar, R. M.; Helal, I. B.; Omran, N. E.; Salama, W. M.	Journal of Basic and Applied Zoology (2013), Volume 66, Number 2, pp. 68-75, 31 refs. ISSN: 2090-9896 DOI: 10.1016/j.jobaz.2013.05.004 Published by: Egyptian German Society for Zoology, Giza URL (Availability): http://www.sciencedirect.com/science/article	Non-relevant by full text	Paper discusses a RAPD-PCR technique for detecting genotoxic damage. Formulation tested (Herfosat, Egypt; not characterized/described further). The data are not relatable to an EU level risk assessment for Annex I renewal.			
Phytotoxicity of glyphosate in the germination of <i>Pisum sativum</i> and its effect on germinated seedlings.	Mondal Subinoy; Kumar Mousumi Mondal Subinoy; Haque Smaranya; Kundu Debajyoti	Environmental health and toxicology, (2017) Vol. 32, pp. e2017011. Electronic Publication Date: 16 Aug 2017 Journal code: 101570455. ISSN: 2233-6567. L-ISSN: 2233-6567. Report No.: PMC-PMC5704570.	Non-relevant by full text	Test design not relevant to EU level ecotoxicological risk assessment for Annex I renewal.			
Initial growth of tree species under herbicide drift.	Monquero, P. A.; Bevilaqua, N. da C.; Silva, P. V. da; Hirata, A. C. S.; Nocelli, R. C. F.; da C. Bevilaqua, N.; da Silva, P. V.	Revista de Ciencias Agrarias / Amazonian Journal of Agricultural and Environmental Sciences (2016), Volume 59, Number 2, pp. 162-172, 29 refs. ISSN: 1517-591X DOI: 10.4322/rca.2197 Published by: Ministerio da Educacao, Universidade Federal Rural da Amazon	Non-relevant by full text	Direct application to trees is not a proposed use of glyphosate and such end-points are not used in the EE level risk assessment for glyphosate renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Changes in hemocytes of <i>Biomphalaria glabrata</i> infected with <i>Echinostoma paraense</i> and exposed to glyphosate-based herbicide.	Monte Taina C de C Chometon Thaize Quiroga; Ferraz- Nogueira Raquel Bertho Alvaro Luiz de Moura Vanessa S; Garcia Juberlan; Maldonado Junior Arnaldo; Faro Marta Julia de Vasconcellos Mauricio Carvalho	Journal of invertebrate pathology, (2019 Jan) Vol. 160, pp. 67-75. Electronic Publication Date: 1 Dec 2018 Journal code: 0014067. E-ISSN: 1096-0805. L-ISSN: 0022-2011.	Non-relevant by full text	Relates to snails being exposure to a formulation of glyphosate that is not the representative formulation at Annex I for the EU.			Y
Relative toxicity of the components of the original formulation of Roundup to five North American anurans.	Moore Lindsay J Fuentes Latic; Rodgers John H Jr; Bowerman William W; Yarrow Greg K; Chao Wayne Y; Bridges William C Jr	Ecotoxicology and environmental safety, (2012 Apr) Vol. 78, pp. 128-33. Electronic Publication Date: 3 Dec 2011 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Whilst the study is well described and data on the formulation and on the surfactant are presented, both test substances are not relevant to the EU renewal of the representative formulation MON52276, which does not contain POEA. Whilst the presented data for these two substances, are supported by the data presented in the paper, there is insufficient information presented to conclude on the assay conducted with the IPA salt of glyphosate. There are no specific biological results presented for anurans exposed to the glyphosate IPA exposure salt in this paper, the finding for the IPA salt can only be considered in a supportive way. All data presented for MON 2139 and MON 0818 are not relevant to the EU level risk assessment of glyphosate for Annex I renewal.			Y
Modulation of the multixenobiotic resistance mechanism in <i>Danio rerio</i> hepatocyte culture (ZF-L) after exposure to glyphosate and Roundup (R).	Moreira, Lopes Fernanda [Reprint Author]; Zomer, Sandrini Juliana; Marques, Souza Marta	Chemosphere, (AUG 2019) Vol. 228, pp. 159-165. CODEN: CSMHAF. ISSN: 0045-6535. E-ISSN: 1879-1298.	Non-relevant by full text	Epigenetic biomarkers are indicators of the presence of a chemical or mixture of chemicals in the environment. They are not indicators of toxicity. The endpoints presented are not relatable to the ecotoxicological risk assessment required for Annex I renewal in the EU.			Y
Evaluating sub-lethal stress from Roundup (R) exposure in <i>Artemia franciscana</i> using H-1 NMR and GC-MS.	Morgan, Melissa A.; Griffith, Corey M.; Dinges, Meredith M.; Lyon, Yana A.; Julian, Ryan R.; Larive, Cynthia K. [Reprint Author]	Aquatic Toxicology (Amsterdam), (JUL 2019) Vol. 212, pp. 77-87. http://www.journals.elsevier.com/aquatic-toxicology/#description . CODEN: AQTOGD. ISSN: 0166-445X. E-ISSN: 1879-1514.	Non-relevant by full text	Formulation used contains POEA - not relevant therefore to EU renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effect of two commercial herbicides on life history traits of a human disease vector, <i>Aedes aegypti</i> , in the laboratory setting.	Morris Alexandra; Klein Talan; Noden Bruce H Murrell Ebony G	Ecotoxicology (London, England), (2016 Jul) Vol. 25, No. 5, pp. 863-70. Electronic Publication Date: 10 Mar 2016 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	No relevant information on metabolism / residues / background levels of glyphosate. Epidemiology, effect of glyphosate on <i>Aedes aegypti</i> .			Y
Effects of subchronic exposure to glyphosate in juvenile oysters (<i>Crassostrea gigas</i>): From molecular to individual levels.	Mottier Antoine; Seguin Alexis; Pabic Charles Le; Lebel Jean Marc; Serpentine Antoine Devos Alexandre; Voiseux Claire; Fievet Bruno Costil Katherine	Marine pollution bulletin, (2015 Jun 30) Vol. 95, No. 2, pp. 665-77. Electronic Publication Date: 30 Oct 2014 Journal code: 0260231. E-ISSN: 1879-3363. L-ISSN: 0025-326X.	Non-relevant by full text	Endpoints based on gene expressions are not considered in an ecotoxicology risk assessment for Annex I renewal.			Y
Acute toxicity of roundup to the nontarget organism <i>Hyalella curvispina</i> . Laboratory and field study	Mugni, Hernan; Paracampo, Ariel; Solis, Marina; Fanelli, Silvia; Bonetto, Carlos	Toxicological and environmental chemistry (2014), Volume 96, Number 7, pp. 1054-1063 ISSN: 1029-0486 Published by: Taylor & Francis Source Note: 2014 Aug. 9, v. 96, no. 7	Non-relevant by full text	Not the representative formulation for the Annex I therefore not relevant to the risk assessment for Annex I renewal.			
Toxicity assesment of two agrochemicals, roundup active and cosmo-Flux41 IF, to colombian anuran tadpoles	Munoz, Liliana Marcela Henao; Velasquez, Teofila Maria Triana; Bautista, Manuel Hernando Bernal	Acta Biologica Colombiana, (2015) Vol. 20, No. 2, pp. 153-161. CODEN: ABICEP. ISSN: 1900-1649.	Non-relevant by full text	Roundup Active is based on the potassium salt of glyphosate and contains a different surfactant system compared with the representative formulation for the Annex I EU renewal. It is therefore not relevant to the ecotoxicology risk assessment as effects cannot be related to the representative formulation.			
<i>Eudrilus eugeniae</i> - a potent bioremediator in controlling herbicide and pesticide pollution.	Murugan, K.; Sindhu, R.; Umamaheswari, S.	International Journal of Pharmaceutical and Biological Archives (2014), Volume 5, Number 5, pp. 67-74, 35 refs. ISSN: 0976-3333 Published by: Mandsaur Institute of Pharmacy, Mandsaur URL (Availability): http://www.ijpba.info/ijpba/index.php/ijpba/article	Non-relevant by full text	Paper discusses the use of earthworm as bioremediation organisms to remove glyphosate from the soil. The endpoints presented are not relatable to an EU level risk assessment for Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Exposure to different glyphosate formulations on the oxidative and histological status of <i>Rhamdia quelen</i> .	Murussi Camila R; Costa Maiara D; Leiteperger Jossiele W; Guerra Luciana; Rodrigues Cintia C R; Loro Vania L; Menezes Charlene C; Severo Eduardo S; Loro Vania L; Flores-Lopes Fabio; Salbego Joseania	Fish physiology and biochemistry, (2016 Apr) Vol. 42, No. 2, pp. 445-55. Electronic Publication Date: 27 Oct 2015 Journal code: 100955049. E-ISSN: 1573-5168. L-ISSN: 0920-1742.	Non-relevant by full text	Findings cannot be related to an EU level ecotoxicology risk assessment			Y
Effect of metabolic inhibitors on growth and carotenoid production in <i>Dunaliella bardawil</i> .	Mysore Doddiah Kavitha; Narayan Anilak Gokare; Aswathanarayana Ravishankar; Ravi Sarada	Journal of food science and technology, (2013 Dec) Vol. 50, No. 6, pp. 1130-6. Electronic Publication Date: 22 Jun 2011 Journal code: 0056471. ISSN: 0022-1155. L-ISSN: 0022-1155. Report No.: NLM-PMC3791244; PMC-PMC3791244.	Non-relevant by full text	Formulation tested contains tallow amine surfactant - not relevant to EU renewal.			
Low doses of glyphosate enhance growth, CO ₂ assimilation, stomatal conductance and transpiration in sugarcane and eucalyptus.	Nascentes Renan F; Carbonari Caio A; Simoes Plinio S; Brunelli Marcela C; Velini Edivaldo D; Duke Stephen O	Pest management science, (2018 May) Vol. 74, No. 5, pp. 1197-1205. Electronic Publication Date: 4 Aug 2017 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Non-relevant by full text	This paper discusses hormetic responses of sugar cane and eucalyptus plants following exposure to low doses of glyphosate. The exposure situation and the presented endpoint data are not relevant to the EU level renewal of glyphosate			
Effects of the surfactant polyoxyethylene amine (POEA) on genotoxic, biochemical and physiological parameters of the freshwater teleost <i>Prochilodus lineatus</i> .	Navarro Claudia D C; Martinez Claudia B R	Comparative biochemistry and physiology. Toxicology & pharmacology : CBP, (2014 Sep) Vol. 165, pp. 83-90. Electronic Publication Date: 20 Jun 2014 Journal code: 100959500. ISSN: 1532-0456. L-ISSN: 1532-0456.	Non-relevant by full text	Contains POEA, therefore not relevant to EU renewal.		Y	

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Do recommended doses of glyphosate-based herbicides affect soil invertebrates? Field and laboratory screening tests to risk assessment.	Niemeyer Julia Carina de Santo Fernanda Benedet Guerra Naiara; Ricardo Filho Altair Macaneiro; Pech Tatiani Maria	Chemosphere, (2018 May) Vol. 198, pp. 154-160. Electronic Publication Date: 3 Feb 2018 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	The study is considered not relevant as it is conducted with Roundup Original. Despite the content being 360 g a.e./L, this product in Brazil is based on MON 78087, which contains MON 0818 which is a surfactant system containing POEA. This is not a relevant surfactant for the Annex I submission and therefore data generated using this formulation is not relevant to the EU Annex I renewal process from an ecotoxicology perspective.			Y
EFFECTS OF HERBICIDES ON THE SURVIVAL OF THE BRAZILIAN NATIVE BEE <i>Melipona scutellaris</i> LATREILLE, 1811 (HYMENOPTERA: APIDAE)	Nocelli, R. C. F.; Soares, S. M. M.; Monquero, P. A. (Reprint)	PLANTA DANINHA, (2019) Vol. 37. ISSN: 0100-8358.	Non-relevant by full text	End-points based on LT50 (time until 50% lethality, are not considered in an EU level bee risk assessment. Exposure scenario is not relevant to the risk assessment as bees were exposed for up to 45 days, being fed continuously and therefore not relatable to an exposure situation in the field.			
Effects of selected herbicides on soil microbial populations in oil palm plantation of Malaysia: a microcosm experiment.	Nur Masirah, M. Z.; Mohamad, R. B.; Kamaruzaman Sijam; Md. Mahbub Morshed; Yahya Awang	African Journal of Microbiology Research (2013), Volume 7, Number 5, pp. 367-374 ISSN: 1996-0808 Published by: Academic Journals, Nairobi URL (Availability): http://www.academicjournals.org/ajmr/PDF/pdf2013/29-Jan/Zain%20et%20al.pdf	Non-relevant by full text	Non-EU monitoring study - not relatable to an EU level ecotoxicology risk assessment for Annex I renewal of glyphosate.			
Investigation on acute toxicity and behavioral changes in <i>Tilapia zillii</i> due to glyphosate-based herbicide, forceup.	Nwani, C. D.; Ibiam, U. A.; Ibiam, O. U.; Nworie, O.; Onyishi, G.; Atama, C.	JAPS, Journal of Animal and Plant Sciences (2013), Volume 23, Number 3, pp. 888-892, 36 refs. ISSN: 1018-7081 Published by: Pakistan Agricultural Scientists Forum, Lahore URL (Availability): http://www.thejaps.org.pk/docs/v-23-3/34.pdf	Non-relevant by full text	The study was not conducted to GLP and a relevant guideline was not followed. The glyphosate formulation used in the study was Forceup and therefore the toxicity of the active substance to this fish species is unclear from this article. There was no rationale for the selection of exposure concentrations presented and no analytical verification of test concentrations was reported during the semi-static test procedure. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			
Lethal concentration and toxicity stress of Carbosulfan, Glyphosate and Atrazine to freshwater air breathing fish <i>Channa punctatus</i> (Bloch).	Nwani, C. D.; Nagpure, N. S.; Ravindra Kumar; Basdeo Kushwaha; Pavan Kumar; Lakra, W. S.; Kumar, R.; Kushwaha, B.; Kumar, P.	International Aquatic Research (2010), Volume 2, Number 2, pp. 105-111, 40 refs. ISSN: 2008-4935 Published by: Islamic Azad University, Tonekabon URL (Availability): http://www.intelaqueres.com/doc/04c.pdf	Non-relevant by full text	Glyphosate products used to look at toxicity to Snakehead fish relevant to the Indian subcontinent. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU renewal			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Prediction of phenolic compounds and formulated glyphosate toxicity in binary mixtures using Rhizobium species dehydrogenase activity.	Nweke, C. O.; Orji, J. C.; Ahumibe, N. C.	Advances in Life Sciences (2015), Volume 5, Number 2, pp. 27-38, 37 refs. ISSN: 2163-1387 Published by: Scientific and Academic Publishing, Rosemead URL (Availability): http://article.sapub.org/10.5923.j.als.20150502.01.html	Non-relevant by full text	Mixture study			
Exopolysaccharides and abiotic stress tolerance in bacterial isolates from "sabia" nodules.	Oliveira, C. S.; Lira Junior, M. A.; Stamford, N. P.; Kuklinsky-Sobral, J.; Moreira, F. M. S.	Revista Caatinga (2014), Volume 27, Number 4, pp. 240-245, 31 refs. ISSN: 0100-316X Published by: Universidade Federal Rural do Semi-Arido, Rio Grande do Norte URL (Availability): http://periodicos.ufersa.edu.br/revistas/index.php/sistema/article/view/30	Non-relevant by full text	Paper discusses a novel approach of assessing abiotic stress tolerance in bacterial isolates. Achieved dataset is not relatable to an EU level risk assessment.			
Phytotoxicity assay for seed production using Brassica rapa L.	Olszyk David Pfleeger Thomas; Lee E Henry; Plocher Milton	Integrated environmental assessment and management, (2010 Oct) Vol. 6, No. 4, pp. 725-34. Journal code: 101234521. E-ISSN: 1551-3793. L-ISSN: 1551-3777.	Non-relevant by full text	Development of an assay to look at impact of glyphosate (and other pesticides) on the seed production of plant species with a short life cycle. End-points cannot be used in the regulatory risk assessment of glyphosate.			
Potato (Solanum tuberosum) greenhouse tuber production as an assay for asexual reproduction effects from herbicides.	Olszyk David Pfleeger Thomas; Lee E Henry; Plocher Milton	Environmental toxicology and chemistry, (2010 Jan) Vol. 29, No. 1, pp. 111-21. Journal code: 8308958. ISSN: 0730-7268. L-ISSN: 0730-7268.	Non-relevant by full text	Study to look at effect of glyphosate product (and other chemistry) on potato plants asexual reproduction to develop an assay. EC25 values generated for glyphosate and effect on fresh weight on potato tuber and shoot weight. Not relevant to the regulatory risk assessment of glyphosate renewal.			
The endocrine disruptor effect of the herbicides atrazine and glyphosate on Biomphalaria alexandrina snails.	Omran Nahla Elsayed; Salama Wesam Mohamed	Toxicology and industrial health, (2016 Apr) Vol. 32, No. 4, pp. 656-65. Electronic Publication Date: 8 Nov 2013 Journal code: 8602702. E-ISSN: 1477-0393. L-ISSN: 0748-2337.	Non-relevant by full text	Cellular level endpoints are not relateable to an EU level ecotox assessment for AIR 5.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
A fluorescence-based hydrolytic enzyme activity assay for quantifying toxic effects of Roundup (R) to <i>Daphnia magna</i> .	Orsted, Michael; Roslev, Peter [Reprint Author]	Environmental Toxicology and Chemistry, (AUG 2015) Vol. 34, No. 8, pp. 1841-1850. http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1552-8618 . CODEN: ETOCDK. ISSN: 0730-7268. E-ISSN: 1552-8618.	Non-relevant by full text	Describes a novel fluorescence technique that is not relevant to EU level ecotoxicology risk assessment for Annex I renewal.			Y
Effects of acute and chronic exposure to glyphosate on common carp (<i>Cyprinus carpio</i> L.) hematological parameters: the beneficial effect of propolis.	Orun, I.; Dogru, M. I.; Erdogan, K.; Dogru, A.; Ongun, A.; Yuksel, E.; Talas, Z. S.	Fresenius Environmental Bulletin (2013), Volume 22, Number 9, pp. 2504-2509, 37 refs. ISSN: 1018-4619 Published by: Parlar Scientific Publications, Freising URL (Availability): http://www.psp-parlar.de	Non-relevant by full text	The article does not report results, which can be used for ecotoxicology risk assessment for Annex I renewal purposes. Contains cellular and molecular findings			Y
Biochemical response and vermiremediation assessment of three earthworm species (<i>Alma millsoni</i> , <i>Eudrilus eugeniae</i> and <i>Libyodrilus violaceus</i>) in soil contaminated with a glyphosate-based herbicide.	Owagboriaye, Folarin [Reprint Author]; Dedek, Gabriel; Bamidele, Julius; Aladesida, Adeyinka; Isibor, Patrick; Feyisola, Roseline; Adeke, Mistura	Ecological Indicators, (JAN 2020) Vol. 108. https://www.sciencedirect.com/journal/ecological-indicators . ISSN: 1470-160X. E-ISSN: 1872-7034.	Non-relevant by full text	Endpoints based on effects on enzymes levels in earthworms are not used in the EU level ecotoxicology risk assessment for renewal under Annex I. Concerning exposure, based on 83.2g a.i./m ² equivalent, the corresponding application rate per hectare is 832,000 g/ha, equal to 832 kg/ha. This rate far exceeds proposed EU application rate max of 2.16 kg/ha. Therefore findings are difficult to relate to an EU exposure scenario. The product used was also not the representative formulation proposed in the Annex I dossier.			
Genotoxic effects of Roundup Full II (R) on lymphocytes of <i>Chaetophractus villosus</i> (<i>Xenarthra</i> , <i>Mammalia</i>): In vitro studies.	Pablo Luaces, Juan [Reprint Author]; Francisco Rossi, Luis; Gabriela Chirino, Moanica; Browne, Melanie; Susana Merani, Maria [Reprint Author]; Dolores Mudry, Marta	PLoS One, (AUG 17 2017) Vol. 12, No. 8, pp. Article No.: e0182911. http://journals.plos.org/plosone/ . ISSN: 1932-6203. E-ISSN: 1932-6203.	Non-relevant by full text	Cellular level endpoints cannot be related to the ecotoxicology Annex I renewal risk assessment.			
The effect of a glyphosate-based herbicide on acetylcholinesterase (AChE) activity, oxidative stress, and antioxidant status in freshwater amphipod: <i>Gammarus pulex</i> (Crustacean).	Pala Aysegul	Environmental science and pollution research international, (2019 Dec) Vol. 26, No. 36, pp. 36869-36877. Electronic Publication Date: 19 Nov 2019 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Roundup was used which contains POEA. This is not the representative formulation for the Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Herbicides impact on Fe and Mn reduction and dehydrogenase activity in an agricultural soil.	Panda, N.; Raha, P.	Journal of Crop and Weed (2016), Volume 12, Number 3, pp. 142-149, 25 refs. ISSN: 0974-6315 Published by: Crop and Weed Science Society, West Bengal URL (Availability): http://cwssbckv.org/Journal/default.aspx	Non-relevant by full text	Comparative effects on Fe and Mn transformation and dehydrogenase activity in soils are not endpoints used in the EU level ecotoxicology risk assessment for Annex I renewal.			
Response of soil phosphatases to glyphosate and its formulations - Roundup (laboratory conditions).	Patkowski, M.; Telesinski, A.	Plant, Soil and Environment (2016), Volume 62, Number 6, pp. 286-292, 26 refs. ISSN: 1214-1178 DOI: 10.17221/673/2015-PSE Published by: Czech Academy of Agricultural Sciences, Prague URL (Availability): http://www.agriculturejournals.cz/publicFiles/18762	Non-relevant by full text	Technical data cannot be related to an EU level Annex I ecotoxicology risk assessment. Formulations used contain POEA.			
Natural Glyphosate Tolerance in Sainfoin (<i>Onyrbrychis vicifolia</i>).	Peel, Michael D. [Reprint Author]; Ransom, Corey V.; Mott, Ivan W.	Crop Science, (SEP-OCT 2013) Vol. 53, No. 5, pp. 2275-2282. CODEN: CRPSAY. ISSN: 0011-183X. E-ISSN: 1435-0653.	Non-relevant by full text	Paper discusses tolerance to glyphosate a comparison with two plants types. Endpoints specific to EU level ecotoxicology risk assessment are not presented.			
Effects of glyphosate on the non-target leaf beetle <i>Ceratomya arcuata</i> (Coleoptera: Chrysomelidae) in field and laboratory conditions.	Pereira Jardel L. Galdino Tarcisio V S; Picanco Marcelo C; Silva Antonio A Silva Geversson A R; Picanco Marcelo C Correa Alberto S Martins Julio C	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2018) Vol. 53, No. 7, pp. 447-453. Electronic Publication Date: 6 Apr 2018 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	The work was based on populations associated with applications made to glyphosate resistant soybeans. Over the top applications to traited crops are not relevant to the Annex I GAP table. The formulation used was Roundup Original, which contains POEA and is not included in the representative formulation (MON 52276), therefore findings of the study based on a formulation containing POEA are not considered relevant to the EU level RA. for Annex I purposes.			Y
Effects of glyphosate on hepatic tissue evaluating melanomacrophages and erythrocytes responses in neotropical anuran <i>Leptodactylus latinasus</i> .	Perez-Iglesias Juan Manuel; Moreno Liliana; Tripole Susana; Natale Guillermo Sebastian Perez-Iglesias Juan Manuel; Natale Guillermo Sebastian Franco-Belussi Lilian; de Oliveira Classius	Environmental science and pollution research international, (2016 May) Vol. 23, No. 10, pp. 9852-61. Electronic Publication Date: 9 Feb 2016 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Presents cellular and morphological level information that cannot be related to an EU level ecotoxicology risk assessment for Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Changes in intermediate metabolism and oxidative balance parameters in sexually matured three-barbeled catfishes exposed to herbicides from rice crops (Roundup®), Primoleo® and Facet®).	Persch Tanilene Sotero Pinto; da Silva Patricia Rodrigues; Dos Santos Sarah Helen Dias; de Freitas Betania Souza; Oliveira Guendalina Turcato	Environmental toxicology and pharmacology, (2018 Mar) Vol. 58, pp. 170-179. Electronic Publication Date: 9 Jan 2018 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	Relates to snails being exposure to a formulation of glyphosate that is not the representative formulation at Annex I for the EU.			Y
Effects of single and multiple applications of glyphosate or aminopyralid on simple constructed plant communities.	Pfleeger Thomas Blakeley-Smith Matthew; Lee E Henry; King George; Plocher Milton; Olszyk David	Environmental toxicology and chemistry, (2014 Oct) Vol. 33, No. 10, pp. 2368-78. Electronic Publication Date: 29 Aug 2014 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	This paper looks at response of plant communities following multiple application scenarios across multiple years. Endpoints in terms of plant volume are not relatable to and EU level Ecotoxicology risk assessment for Annex I renewal.			Y
Comparing effects of low levels of herbicides on greenhouse- and field-grown potatoes (Solanum tuberosum L.), soybeans (Glycine max L.), and peas (Pisum sativum L.)	Pfleeger, Thomas; Olszyk, David; Lee, E. Henry; Plocher, Milton	Environmental Toxicology and Chemistry, (2010) Vol. 30, No. 2, pp. 455-468. CODEN: ETOCDK. ISSN: 0730-7268.	Non-relevant by full text	Study to compare effects of glyphosate on greenhouse and field grown potatoes, soybean and peas to determine if greenhouse studies are protective of field conditions. Conducted by US EPA. EC25 values generated but as the paper is comparing effect in and outside the greenhouse, the data does not contribute to the regulatory risk assessment of the glyphosate renewal.			
Comparative toxicity of two glyphosate-based formulations to <i>Eisenia andrei</i> under laboratory conditions.	Piola Lucas Fuchs Julio; Oneto Maria Luisa; Basack Silvana; Kesten Eva; Casabe Norma	Chemosphere, (2013 Apr) Vol. 91, No. 4, pp. 545-51. Electronic Publication Date: 18 Jan 2013 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	End-points not relatable to an EU level ecotoxicology risk assessment for Annex I renewal.	Y	Y	Y
Impact of multiple anthropogenic stressors on freshwater: how do glyphosate and the invasive mussel <i>Limnoperna fortunei</i> affect microbial communities and water quality?.	Pizarro Haydee; Di Fiori Eugenia; Sinistro Rodrigo; Ramirez Marina; Rodriguez Patricia; Vinocur Alicia; Cataldo Daniel	Ecotoxicology (London, England), (2016 Jan) Vol. 25, No. 1, pp. 56-68. Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	The paper looks at the synergistic effects of glyphosate and freshwater mussels on eutrophication in surface waters. Not relatable to an EU level ecotoxicology risk assessment for Annex I renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Temperature and body mass drive earthworm (<i>Eisenia fetida</i>) sensitivity to a popular glyphosate-based herbicide	Pochron, Sharon; Choudhury, Mahin; Gomez, Rhiannon; Hussaini, Sajjad; Illuzzi, Kyra; Mann, Michael; Mezić, Mateo; Nikakis, Jaqueline; Tucker, Clara	Applied soil ecology (2019), Volume 139, pp. 32-39 ISSN: 0929-1393 Published by: Elsevier B.V. Source Note: 2019 July, v. 139	Non-relevant by full text	Formulation used is not the representative formulation for the Annex I renewal.			
Biomarkers of Environmental Contamination in Reptile Species: The Effect of Pesticide Formulations on Broad-snouted Caiman <i>Caiman latirostris</i> (Crocodylia, Alligatoridae).	Poletta, G. L. [Reprint Author]; Lopez Gonzalez, E.; Burella, P. M.; Romito, M. L.; Siroski, P. A.; Mudry, M. D.	Larramendy, ML [Editor]. (2017) pp. 467-517. Ecotoxicology and Genotoxicology: Non-Traditional Aquatic Models. Publisher: ROYAL SOC CHEMISTRY, THOMAS GRAHAM HOUSE, SCIENCE PARK, CAMBRIDGE CB4 4WF, CAMBS, UK. Series: Issues in Toxicology. ISSN: 1757-7179.	Non-relevant by full text	Cellular and molecular level findings cannot be related to an EU level ecotoxicology risk assessment, a book chapter.			
Effect of herbicides application on the soil biological activity in the tree nursery	Polyakova, N. N.; Seraya, L. G.; Sidorenko, O. D.; Beloshapkina, O. O.; Larina, G. E.	Agrokimiya (2018), (12), 35-41 CODEN: AGKYAU; ISSN: 0002-1881	Non-relevant by full text	The paper describes the use of buried linen to establish the activity of microorganisms in the soil during a 2 year monitoring period in a tree nursery. The observations cannot be related to an EU level risk assessment as they are based on visual inspection / qualitative assessment of the amount of apparent breakdown of the linen.			
Toxicity of herbicides used in the sugarcane crop to diazotrophic bacterium <i>Herbaspirillum seropedicae</i> .	Procopio, S. de O.; Fernandes, M. F.; Teles, D. A.; Sena Filho, J. G.; Cargnelutti Filho, A.; Resende, M. A.; Vargas, L.; de O. Procopio, S.	Semina: Ciencias Agrarias (Londrina) (2014), Volume 35, Number 5, pp. 2383-2398, 37 refs. ISSN: 1676-546X DOI: 10.5433/1679-0359.2014v35n5p2383 Published by: Universidade Estadual de Londrina, Londrina URL (Availability): http://www.uel.br/revistas/uel/in	Non-relevant by full text	Paper discusses the impact of glyphosate on cell densities of soil bacteria tested in liquid culture and using novel assay approaches. The endpoints cannot be related to an EU level ecotoxicology risk assessment for renewal.			
Toxic effects of glyphosate on diploid and triploid fin cell lines from <i>Misgurnus anguillicaudatus</i> .	Qin Yanjie; Xiang Yang; Wu Di; Bai Liwen; Li Zhuangzhuang; Liang Yan Li Xia	Chemosphere, (2017 Aug) Vol. 180, pp. 356-364. Electronic Publication Date: 25 Mar 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Cellular level endpoints cannot be related to the ecotoxicology Annex I renewal risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Disturbances in reproduction and expression of steroidogenic enzymes in aquatic invertebrates exposed to components of the herbicide Roundup	Reddy, Sneha B.; Nolan, Colleen J.; Plautz, Carol Zygar	Toxicology Research and Application, (2018) Vol. 2, pp. 2397847318805276/1-2397847318805276/2397847318805276. CODEN: TRAOAW. ISSN: 2397-8473.	Non-relevant by full text	Findings cannot be related to an EU level ecotoxicology risk assessment, as the methods used are not recognised at the EU level.			
Leaf morphoanatomy and biochemical variation on coffee cultivars under drift simulation of glyphosate.	Reis, L. A. C.; Carvalho, F. P.; Franca, A. C.; Francino, D. M. T.; Pinto, N. A. V. D.; Freitas, A. F.	Planta Daninha (2018), Volume 36, e018143560 p., 35 refs. ISSN: 0100-8358 DOI: 10.1590/s0100-83582018360100149 Published by: Sociedade Brasileira da Ciencia das Plantas Daninhas, Vicos URL (Availability): http://www.scielo.br/scielo.php?script=sci_arttex	Non-relevant by full text	Findings not relatable to an EU level ecotoxicology risk assessment for product renewal in the EU.			
The impact of Eskoba, a glyphosate formulation, on the freshwater plankton community.	Reno U; Gutierrez M F; Regalado L; Gagneten A M	Water environment research : a research publication of the Water Environment Federation, (2014 Dec) Vol. 86, No. 12, pp. 2294-300. Journal code: 9886167. ISSN: 1061-4303. L-ISSN: 1061-4303.	Non-relevant by full text	Overall the study was well described and conducted partially in accordance with OECD Guideline No. 201. The endpoints measured within the study included survival, age of reproduction, and fecundity. However, validity criteria on mortality was exceeded in the control organisms for several intervals. Analytical measurements were only performed on stock solution. Second part of the study was performed with native micro-crustacean species in Argentina. The test exposure history to the organisms was unknown as they were collected within the local environment. Finally, the glyphosate formulation Eskoba. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			
Effects of glyphosate formulations on the population dynamics of two freshwater cladoceran species.	Reno U; Regalado L; Gagneten A M Doyle S R; Momo F R Momo F R	Ecotoxicology (London, England), (2018 Sep) Vol. 27, No. 7, pp. 784-793. Electronic Publication Date: 5 Feb 2018 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	Formulation used is not the representative formulation for the Annex I renewal.			Y
Water polluted with glyphosate formulations: effectiveness of a decontamination process using <i>Chlorella vulgaris</i> growing as bioindicator	Reno, Ulises; Ana MarA-a Gagneten; Cristina Zalazar; Eduardo Vidal; Luciana Regalado; Melisa Mariani	Journal of applied phycology (2016), Volume 28, Number 4, pp. 2279-2286 ISSN: 0921-8971 Published by: Springer Netherlands Source Note: 2016 Aug., v. 28, no. 4	Non-relevant by full text	Study conducted using Roundup ultramax (AKA Mon 78784) that contains surfactants that are different to those used in MON 52276. Therefore findings cannot be related to the ecotoxicology assessment for Annex I renewal for MON 52276			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pouteria torta is a remarkable native plant for biomonitoring the glyphosate effects on Cerrado vegetation	Rezende-Silva, Sueisla Lopes; Alan Carlos Costa; Fabio Henrique Dyszy; Priscila Ferreira Batista; Ailton Jose Crispim-Filho; Kelly Juliane Telles Nascimento; Adinan Alves da Silva	Ecological indicators (2019), Volume 102, pp. 497-506 ISSN: 1470-160X Published by: Elsevier Ltd Source Note: 2019 July, v. 102	Non-relevant by full text	Formulation not the representative formulation for the Annex I renewal. Enzymatic endpoints are not relevant to an EU level risk assessment			
Effect of a glyphosate-based herbicide on gene expressions of the cytokines interleukin-1 β and interleukin-10 and of heme oxygenase-1 in European sea bass, <i>Dicentrarchus labrax</i> L.	Richard Simone Prevot-D'Alvise Nathalie; Bunet Robert; Simide Remy; Couvray Sylvain; Coupe Stephane; Grillasca Joel Paul	Bulletin of environmental contamination and toxicology, (2014 Mar) Vol. 92, No. 3, pp. 294-9. Electronic Publication Date: 10 Jan 2014 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Non-relevant by full text	End-points based on gene expression are not considered in the EU level Annex I ecotoxicology risk assessment for renewal.			Y
The Effects of the Glyphosate-based Herbicide WeatherMax RTM on Sexual Differentiation and Growth in the Wood Frog (<i>Lithobates sylvaticus</i>).	Robertson, Courtney	Masters Abstracts International. Vol. 51, no. 06, 171 p. 2013. ISBN: 9780494860816	Non-relevant by full text	The formulation used contains a surfactant system that is not relevant to the representative formulation being considered for the Annex I renewal in the EU.			Y
Proteomic and histopathological response in the gills of <i>Poecilia reticulata</i> exposed to glyphosate-based herbicide.	Rocha Thiago Lopes; Santos Ana Paula Rezende Dos Yamada Aureo Tatsumi Soares Celia Maria de Almeida; Borges Clayton Luiz; Bailao Alexandre Melo Saboia-Morais Simone Maria Teixeira	Environmental toxicology and pharmacology, (2015 Jul) Vol. 40, No. 1, pp. 175-86. Electronic Publication Date: 13 May 2015 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	Observed findings relate to a formulation that is not the representative formulation for the Annex I renewal in the EU.			
Glyphosate Alters Aboveground Net Primary Production, Soil Organic Carbon and Nutrients in Pampean Grasslands (Argentina)	Rodriguez, Adriana M; Elizabeth J Jacobo; Rodolfo A Golluscio	Rangeland ecology & management (2017) ISSN: 1550-7424 Published by: Elsevier Inc. Source Note: 2017,	Non-relevant by full text	This paper describes multi season monitoring of different habitats in Argentina, the findings of which cannot be related to an EU level risk assessment for Annex I renewal from an ecotoxicology perspective.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Aquatic hazard assessment of MON 0818, a commercial mixture of alkylamine ethoxylates commonly used in glyphosate-containing herbicide formulations. Part 2: Roles of sediment, temperature, and capacity for recovery following a pulsed exposure.	Rodriguez-Gil Jose L.; Prosser Ryan; Hanta Gregory; Solomon Keith R Poirier David Lissemore Linda Hanson Mark	Environmental toxicology and chemistry, (20170200) Vol. 36, No. 2, pp. 512-521. Electronic Publication Date: 30 Aug 2016 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Contains POEA, therefore not relevant to EU renewal.			
Construction of a combined soil quality indicator to assess the effect of glyphosate application.	Romano-Armada Neli Amoroso Maria J Rajal Veronica B	The Science of the total environment, (2019 Sep 10) Vol. 682, pp. 639-649. Electronic Publication Date: 8 May 2019 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Paper describes a new approach to establishing the quality of farmland soils by assessing multiple physical, chemical and biological quality factors of soils and attempting to classify these as being of high or low quality based on a known history of glyphosate or no glyphosate application. To this end, the paper does not describe endpoint data that can be related to an EU level Annex I submission.			
Phytotoxicity of Aspidosperma desmanthum under glyphosate drifting. Fitotoxicidade de peroba-mica (Aspidosperma desmanthum) submetidas a deriva de glyphosate.	Rondon Neto, R. M.; Benetti, E.; Yamashita, O. M.; Gusmao, G. A.	Revista Brasileira de Herbicidas (2011), Volume 10, Number 2, 103 p., 10 refs. ISSN: 2236-1065 Published by: Universidade Estadual de Maringá, Umuarama URL (Availability): http://www.rherbicidas.com.br/index.php/rbh/article/view/108	Non-relevant by full text	The study looks at the toxicity of glyphosate on seedlings of a tree species that is native to South America, Mexico and West Indies. The test substance was Gliz 480 SL (IPA salt). Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			
Glyphosate induces neurotoxicity in zebrafish.	Roy Nicole M Carneiro Bruno; Ochs Jeremy	Environmental toxicology and pharmacology, (2016 Mar) Vol. 42, pp. 45-54. Electronic Publication Date: 4 Jan 2016 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	Endpoint not used in EU level ecotoxicology risk assessment			
Effect of the concentration of glyphosate present in body waters near transgenic soybean fields on the honeybee Apis mellifera, and the stingless bee Tetragonisca angustula. Efecto de la concentracion de glifosato presente en cuerpos de agua cercanos a ca	Ruiz-Toledo, J.; Sanchez-Guillen, D.	Acta Zoologica Mexicana (2014), Volume 30, Number 2, pp. 408-413, 21 refs. ISSN: 0065-1737 Published by: Instituto de Ecología, A.C., Xalapa URL (Availability): http://www1.inecol.edu.mx/azm/AZM30(2)-2014/14.AZM30-2-Ruiz-Toledo-et-al.pdf	Non-relevant by full text	Non-EU monitoring study. Extrapolation to EU difficult.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Female Preference and Adverse Developmental Effects of Glyphosate-Based Herbicides on Ecologically Relevant Traits in Japanese Quails.	Ruuskanen Suvi; Rainio Miia J; Laihonon Miika; Saikkonen Kari; Saloniemi Irma; Helander Marjo Kuosmanen Venla	Environmental science & technology, (2020 Jan 06) . Electronic Publication Date: 6 Jan 2020 Journal code: 0213155. E-ISSN: 1520-5851. L-ISSN: 0013-936X.	Non-relevant by full text	Formulation used is not the representative formulation for the Annex I renewal.			
Toxicological and biochemical investigation of certain herbicides on <i>Culex pipiens</i> L. (Diptera: Culicidae) mosquitoes under laboratory conditions	Saba, Reda M.; Mohamed, Ibrahim A.; Ahmed, Mohamed A. I.	Advances in Natural and Applied Sciences, (2018) Vol. 12, No. 2, pp. 6-12. CODEN: ANASCD. ISSN: 1998-1090.	Non-relevant by full text	Non-representative formulation (Herbald 48% EC) was tested. Test organisms were field collected with no knowledge of prior exposure to chemicals. Important information is missing in the material and methods section. The preparation and application of the test solutions as well as the tested concentration range were not reported. The test item is not adequately specified. Although the herbicide formulation is given with a purity of 48 %, it is not clear whether the test concentrations refer to the product or to the active substance. Moreover, the active ingredient is given as glyphosate isopropylamine which should be formulated as a salt resulting in test concentrations as acid equivalents. In addition, the biological results of the test were not sufficiently stated. No mortality data neither for the test concentrations nor for the controls was given to evaluate the results. Furthermore, there was no analytical verification of test concentrations reported, there is no study guideline and the study is non-GLP and thus the reliability of the study and its reliability to an EU level ecotoxicology risk assessment is questionable.			
Glyphosate on digestive enzymes activity in piava (<i>Leporinus obtusidens</i>).	Salbego, Joseania; Pretto, Alexandra; Machado da Silva, Vera Maria; Loro, Vania Lucia; Lazzari, Rafael; Gioda, Carolina Rosa; Baldisserotto, Bernardo [Reprint Author]	Ciencia Rural, (SEP 2014) Vol. 44, No. 9, pp. 1603-1607. http://www.ufsm.br/ccr/revista/ . ISSN: 0103-8478. E-ISSN: 1678-4596.	Non-relevant by full text	Study provides information on cellular/molecular level and is no ecotoxicological relevant study			Y
A summary of acute risk of four common herbicides to birds and mammals .	Bautista, Shawna L.	U S Forest Service Pacific Northwest Research Station General Technical Report PNW-GTR, (JUN 2007) No. 694, pp. 77-82.	Non-relevant by full text	In this publication risk assessments for birds and mammals are conducted on the basis of available endpoints from other publications. No new data for the RA is provided.			
Effect of pesticide glyphosate on some biochemical features in cyanophyta algae <i>oscillatoria limnetica</i> .	Salman, Jasim M. (correspondence); Abdul-Adel, Esraa Alkaim, Ayad F.	International Journal of PharmTech Research, (2016) Vol. 9, No. 8, pp. 355-365. Refs: 76 ISSN: 0974-4304	Non-relevant by full text	Cellular and molecular level endpoints discussed that are not relevant to EU level ecotoxicology risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Survival, Reproduction, Avoidance Behavior and Oxidative Stress Biomarkers in the Earthworm Octolasion cyaneum Exposed to Glyphosate.	Salvio Carla; Rafael Sergio; Manetti Pablo L; Menone Mirta L; Iturburu Fernando G	Bulletin of environmental contamination and toxicology, (2016 Mar) Vol. 96, No. 3, pp. 314-9. Electronic Publication Date: 11 Jan 2016 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Non-relevant by full text	The earthworm were collected in field in Argentina and acclimatized for 2 weeks. Therefore, the organisms may have had exposure to other chemicals in the field. No information on the field history regarding application of pesticides is known. Analytical measurements of glyphosate were carried out in the short-term bioassay samples. While the test organisms, test design and procedure are well described and all information for the evaluation of the study is given, no endpoint considered relevant for use in risk assessment was determined. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
Acute toxic effects of roundup herbicide on wood frog tadpoles (<i>Rana sylvatica</i>).	Comstock, Brett A.; Sprinkle, Spencer L.; Smith, Geoffrey R.	Journal of Freshwater Ecology, (DEC 2007) Vol. 22, No. 4, pp. 705-708.	Non-relevant by full text	The Roundup formulation used in the study contains POEA surfactant which is permitted in formulated herbicidal products in the EU / Japan. No analytical verifications of the test item concentrations in the test media were conducted. No replicates were used for the study design and study conditions are not described (pH, temperature, oxygen content, water quality parameters, feeding)			Y
Setal anomalies in the tropical earthworms <i>Drawida willsi</i> and <i>Lampito mauritii</i> exposed to elevated concentrations of certain agrochemicals: An electron micrographic and molecular docking approach	Samal, Suryasikha; Mishra, C S K; Sahoo, Sunanda; Samal, Rashmi Rekha	Environmental technology & innovation (2019), Volume 15 ISSN: 2352-1864 Published by: Elsevier B.V. Source Note: 2019 Aug., v. 15	Non-relevant by full text	Paper describes a electron microscopic approach for establishing effects of pesticides on setal in worms. The findings are not relatable to an EU level ecotoxicological risk assessment.			
Biochemical effects of glyphosate based herbicide, Excel Mera 71 on enzyme activities of acetylcholinesterase (AChE), lipid peroxidation (LPO), catalase (CAT), glutathione-S-transferase (GST) and protein content on teleostean fishes.	Samanta Palas; Ghosh Apurba Ratan Pal Sandipan Mukherjee Aloke Kumar	Ecotoxicology and environmental safety, (2014 Sep) Vol. 107, pp. 120-5. Electronic Publication Date: 11 Jun 2014 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Cellular level endpoints cannot be related to the ecotoxicology Annex I renewal risk assessment.			Y
Evaluation of metabolic enzymes in response to Excel Mera 71, a glyphosate-based herbicide, and recovery pattern in freshwater teleostean fishes.	Samanta Palas; Ghosh Apurba Ratan Pal Sandipan Mukherjee Aloke Kumar	BioMed research international, (2014) Vol. 2014, pp. 425159. Electronic Publication Date: 12 Jun 2014 Journal code: 101600173. E-ISSN: 2314-6141. Report No.: NLM-PMC4071806; PMC-PMC4071806.	Non-relevant by full text	Cellular level end-points cannot be related to the ecotoxicology Annex I renewal risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Assessment of adverse impacts of glyphosate-based herbicide, Excel Mera 71 by integrating multi-level biomarker responses in fishes	Samanta, P.; Pal, S.; Mukherjee, A. K.; Senapati, T.; Jung, J.; Ghosh, A. R.	International Journal of Environmental Science and Technology, (2018) pp. Ahead of Print. CODEN: IJESHU. ISSN: 1735-1472.	Non-relevant by full text	Molecular level endpoints, associated with biomarker responses are not part of the ecotoxicology risk assessment for fish for an Annex I renewal of a plant protection product in the EU. Observations are not relatable to the EU renewal of glyphosate. Not representative formulation.			
Effects of Roundup formulations on biochemical biomarkers and male sperm quality of the livebearing <i>Jenynsia multidentata</i> .	Sanchez Jessica Andrea Albanil Varela Antonio Sergio Junior Corcini Carine Dahl da Silva Janaina Camacho; Klein Roberta Daniele Primel Ednei Gilberto; Caldas Sergiane Martins Camila De Martinez Gaspar	Chemosphere, (2017 Jun) Vol. 177, pp. 200-210. Electronic Publication Date: 1 Mar 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Formulations contain POEA and therefore not relevant to the EU level ecotoxicological risk assessment for Annex I renewal.			Y
Acute effects of glyphosate herbicide on metabolic and enzymatic parameters of silver catfish (<i>Rhamdia quelen</i>).	Gluszczak Lissandra; Miron Denise Dos Santos; Moraes Bibiana Silveira; Simoes Roli Rodrigues; Schetinger Maria Rosa Chitolina; Morsch Vera Maria; Loro Vania Lucia	Comparative biochemistry and physiology. Toxicology and pharmacology : CBP, (2007 Nov) Vol. 146, No. 4, pp. 519-24. Electronic Publication Date: 19 Jun 2007	Non-relevant by full text	The Roundup formulation used in the study contains POEA surfactant which is permitted in formulated herbicidal products in the EU/Japan. In addition in the study the effects of Roundup on metabolic and enzymatic parameters of silver catfish were assessed. As the findings are only based on molecular level they cannot be related to the risk assessment.			Y
Acute toxic hazard evaluations of glyphosate herbicide on terrestrial vertebrates of the Oregon coast range.	Mccomb Brenda C; Curtis Larry; Chambers Carol L; Newton Michael; Bentson Kenneth	Environmental science and pollution research international, (2008 May) Vol. 15, No. 3, pp. 266-72.	Non-relevant by full text	Non relevant route of exposure (i.p.) for mammals.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Acute toxicity of herbicide (glyphosate) in <i>Clarias gariepinus</i> juveniles.	Sani Ali; Idris Muhammad Khadija	Toxicology reports, (2016) Vol. 3, pp. 513-515. Electronic Publication Date: 6 May 2016 Journal code: 101630272. ISSN: 2214-7500. L-ISSN: 2214-7500. Report No.: PMC-PMC5615939.	Non-relevant by full text	No information on test substance and test design not recognised. Fish too big for use in study.			Y
DIFFERENTIAL TOLERANCE OF CLONES OF <i>Eucalyptus grandis</i> EXPOSED TO DRIFT OF THE HERBICIDES CARFENTHAZONE-ETHYL AND GLYPHOSATE	Santos, S. A.; Alfenas, A. C.; Faria, A. T. Tuffi-Santos, L. D. (Reprint) Sant'Anna-Santos, B. F.	PLANTA DANINHA, (2019) Vol. 37. ISSN: 0100-8358.	Non-relevant by full text	The study is considered not relevant as it is conducted with Roundup Original. Despite the content being 360 g a.e./L, this product in Brazil is based on MON 78087, which contains MON 0818 which is a surfactant system containing POEA. This is not a relevant surfactant for the Annex I submission and therefore data generated using this formulation is not relevant to the EU Annex I renewal process from an ecotoxicology perspective.			
Effects of herbicides on growth and number of actinomycetes in soil and in vitro.	Santric, L.; Radivojevic, L.; Umiljendic, J. G.; Saric-Krsmanovic, M.; Durovic-Pejcev, R.	Pesticidi i Fitomedicina (2016), Volume 31, Number 3/4, pp. 121-128 ISSN: 1820-3949 Published by: Institute of Pesticides and Environmental Protection, Belgrade URL (Availability): http://www.pesting.org.rs/izdavacka-delatnost/casopis-pesticides-and-phyt	Non-relevant by full text	No endpoints presented that can be used in an EU level ecotoxicology risk assessment for Annex I renewal.			
THE EFFECTS OF NICOSULFURON AND GLYPHOSATE ON MICROBIAL ACTIVITY OF DIFFERENT SOILS	Santric, Lj (Reprint); Radivojevic, Lj; Gajic-Umiljendic, J.; Saric-Krsmanovic, M.; Durovic-Pejcev, R.	PLANTA DANINHA, (2018) Vol. 36. ISSN: 0100-8358.	Non-relevant by full text	Measured parameters are not used in the EU level ecotoxicology assessment for Annex I renewal. It cannot be confirmed that the product used was the representative formulation.			
Weed management practices affect the diversity and relative abundance of phytophagous mites.	Saraiva Althieris de Sousa Sarmiento Renato A; Erasmo Eduardo A L; Pedro-Neto Marcal; de Souza Danival Jose; Teodoro Adenir V; Silva Daniella G	Experimental & applied acarology, (2015 Mar) Vol. 65, No. 3, pp. 359-75. Electronic Publication Date: 21 Dec 2014 Journal code: 8507436. E-ISSN: 1572-9702. L-ISSN: 0168-8162.	Non-relevant by full text	The paper describes a long term monitoring programme looking at weed management practices and their impact on mite species in a particular region of Brazil, that cannot be related to an EU level risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Root-zone glyphosate exposure adversely affects two ditch species.	Saunders Lyndsay E; Koontz Melissa B; Pezeshki Reza	Biology, (2013 Dec 18) Vol. 2, No. 4, pp. 1488-96. Electronic Publication Date: 18 Dec 2013 Journal code: 101587988. ISSN: 2079-7737. L-ISSN: 2079-7737. Report No.: NLM-PMC4009795; PMC-PMC4009795.	Non-relevant by full text	The author describes a formulation that is not the representative formulation for the Annex I.			Y
Assessment of toxicity of a glyphosate -based formulation using bacterial systems in lake water .	Amoros I; Alonso J L; Romaguera S; Carrasco J M	Chemosphere, (2007 May) Vol. 67, No. 11, pp. 2221-8. Electronic Publication Date: 31 Jan 2007	Non-relevant by full text	The Roundup formulation used in the study contains POEA surfactant which is permitted in formulated herbicidal products in the EU / Japan. Analytical verifications of the test item concentrations were conducted but no detailed results were reported. Results are reported in diagrams, but no numerical results are presented for the treatments			
Change in the enzyme spectra of soil microorganisms <i>Micrococcus luteus</i> CCM 248 and <i>Stenotrophomonas maltophilia</i> UKM V-257 under the effect of certain pesticides.	Glazko, V. I.; Glazko, T. T.; Iutinskaya, G. A.; Yamborko, N. I.	Russian Agricultural Sciences (2006) , Number 5, pp. 8-12, translated from Doklady Rossiiskoi Akademii Selskokhozyaistvennykh Nauk (2006) No. 3, 27-30 (Ru), 12 refs. ISSN: 1068-3674 Published by: Allerton Press, Inc., New York	Non-relevant by full text	In this literature article the effect of Roundup and other pesticides on the synthesis of enzymes in <i>M. luteus</i> CCM 248 and <i>S. maltophilia</i> UKM V-257 is examined. As the findings are based on molecular level, they cannot be related to the risk assessment.			
Changes in juvenile coho salmon electro-olfactogram during and after short-term exposure to current-use pesticides.	Tierney Keith B; Ross Peter S; Jarrard Hugh E; Delaney K R; Kennedy Christopher J	Environmental toxicology and chemistry, (2006 Oct) Vol. 25, No. 10, pp. 2809-17.	Non-relevant by full text	In this literature article the effect of glyphosate and other pesticides on the olfaction of juvenile coho-salmons is examined. The assessed study endpoint is not regarded relevant for the EU / Japanese risk assessment.			Y
Sub-lethal effects of a glyphosate-based commercial formulation and adjuvants on juvenile oysters (<i>Crassostrea gigas</i>) exposed for 35days.	Seguin Alexis; Mottier Antoine; Perron Carole; Lebel Jean Marc; Serpentin Antoine; Costil Katherine	Marine pollution bulletin, (2017 Apr 15) Vol. 117, No. 1-2, pp. 348-358. Electronic Publication Date: 12 Feb 2017 Journal code: 0260231. E-ISSN: 1879-3363. L-ISSN: 0025-326X.	Non-relevant by full text	Contains POEA, therefore not relevant to EU renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Changes in microbial biomass and phosphatase activity exposed to 2,4-D and glyphosate	Gupta, Deep; Joshi, Namita	Journal of Environmental Research and Development (2009), 3(3), 663-669	Non-relevant by full text	The study focuses on the effects of glyphosate on the phosphatase enzyme, biomass carbon and phosphorous in soil. These parameters are not considered relevant for the EU / Japanese risk assessment. In addition, test soils originate from cultivated land from North India and might therefore not be regarded representative for the EU/Japan.			
Changes in microbial community structure following herbicide (glyphosate) additions to forest soils	Ratcliff, A W; Busse, M D; Shestak, C J	Applied soil ecology (2006) , Volume 34, Number 2-3, pp. 114-124, Electronic ISSN: 0929-1393 Source Note: 2006 Dec., v. 34, issue 2-3	Non-relevant by full text	This study on the effects of glyphosate on the structure of the microbial community in soil is not dealing with EU / Japan representative uses / conditions (e.g. soil was collected from two different ponderosa pine plantations in northern California). In addition, it deals with a Roundup formulation, probably containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.			
Effect of exposure to glyphosate pesticide, cadmium and chromium on biomass of algae (Chlorococcum humicola and chlorella vulgaris) in polluted aqueous culture.	Shaker, Bushra K (correspondence); Als Salman, Ibrahim M A Al-Attabi, Mahdi S	Indian Journal of Public Health Research and Development, (October 2018) Vol. 9, No. 10, pp. 708-713. Refs: 15 ISSN: 0976-0245	Non-relevant by full text	End-points are based on exposure to both glyphosate and metals and therefore is considered a mixture. Therefore not relevant to EU level risk assessment for glyphosate renewal.			
Biodegradation of glyphosate herbicide by Salinicoccus spp isolated from Qom Hoze-soltan lake, Iran	Sharifi, Yaser; Ali, Pourbabaei Ahmad; Javadi, Ali; Abdolmohammadi, Mohammad Hossein; Saffari, Mehri; Morovvati, Abbas	Environmental Health Engineering and Management Journal (2015), 2(1), 31-36 CODEN: EHEMAF; ISSN: 2423-4311 URL: http://www.chemj.com/browse.php?a_id=54&slc_lang=en&sid=1&ftxt=1	Non-relevant by full text	Paper discusses the potential use of a bacterial strain for biodegrading of glyphosate in a freshwater lake in Iran. Not relevant to the Annex I renewal process in the EU.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Chronic exposure to sub-lethal concentration of a glyphosate-based herbicide alters hormone profiles and affects reproduction of female Jundia (<i>Rhamdia quelen</i>).	Soso, Auren Benck; Barcellos, Leonardo Jose Gil; Ranzani-Paiva, Maria Jose; Kreutz, Luiz Carlos; Quevedo, Rosmari Mezzalira; Anziliero, Deniz; Lima, Marina; Da Silva, Leonardo Bolognesi; Ritter, Filipe; Bedin, Alexandra Calliari; Finco, Jovani Antonio	Environmental Toxicology and Pharmacology, (MAY 2007) Vol. 23, No. 3, pp. 308-313. http://www.journals.elsevier.com/environmental-toxicology-and-pharmacology/#description . ISSN: 1382-6689. E-ISSN: 1872-7077.	Non-relevant by full text	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in earthen ponds under open-air conditions in Brazil). In addition, it deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.			Y
Glyphosate-containing herbicide impacts physical and behavioral changes during head regeneration in <i>Dugesia</i> (<i>Girardia</i>) <i>tigrina</i>	Sheehan, Nicholas; Carl Hoegler	Bios (2018), Volume 89, Number 1, pp. 14-22 ISSN: 0005-3155 Published by: Beta Beta Beta Biological Society Source Note: 2018 Mar., v. 89, no. 1	Non-relevant by full text	Formulation used is not the representative formulation for the Annex I renewal.			Y
Comments on /Evaluation of estrogenic activities of aquatic herbicides and surfactants using a rainbow trout vitellogenin assay/.	Kramer, Vincent (Correspondence); Blewett, Craig; Gersich, Michael	Toxicological Sciences, (June 2008) Vol. 104, No. 1, pp. 228-230. Refs: 20 ISSN: 1096-6080; E-ISSN: 1096-0929 CODEN: TOSCF2	Non-relevant by full text	This is a letter to the editor (i.e. an opinion article about another different study), where no new data for the RA is provided.			
Comparative effects of the formulation of glyphosate - surfactant herbicides on hemodynamics in swine.	Lee Hsin-Ling; Kan Chung-Dann; Tsai Chia-Ling; Liou Ming-Jer; Guo How-Ran	Clinical toxicology (Philadelphia, Pa.), (2009 Aug) Vol. 47, No. 7, pp. 651-8.	Non-relevant by full text	Reported results on hemodynamics and death in piglets are according to the publication depending on surfactants (including POEA) and thus not relevant for the risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Comparison of a score-based approach with risk-based ranking of in-use agricultural pesticides in Canada to aquatic receptors.	Whiteside, Melanie; Mineau, Pierre; Morrison, Clare; Knopper, Loren D.	Integr. Environ. Assess. Manage., Volume 4, Issue 2, Page 215-236, Publication Year 2008	Non-relevant by full text	This article, presenting a new risk-based approach for ranking pesticides and their potential risk to aquatic life, only contains secondary ecotoxicological information from several sources: The Pesticide Manual of the British Crop Protection Council, USEPA pesticide registration data, the French AGRITOX, European Commission pesticide review reports, and the USEPA ECOTOX database. It does not present any new toxicity data. In addition, this publication deals with general pesticide exposures (not glyphosate specific).			
Effect of Herbicide Excel Mera-71 (Glyphosate) Treatment on Seed Germination and Early Seedling Growth of Black Gram (Vigna mungo, Hepper.) var. T-9.	Shimina, V. S. [Reprint Author]; Neelamegam, R.	Advances in Plant Sciences, (DEC 2010) Vol. 23, No. 2, pp. 515-518. ISSN: 0970-3586.	Non-relevant by full text	Conducted in India, GLY product used to look at the toxicity to germination, seedling growth in seedlings of black gram. Endpoint not relevant for the regulatory renewal of GLY.			
Acute exposure of a glyphosate-based herbicide affects the gills and liver of the Neotropical fish, Piaractus mesopotamicus.	Shiogiri Natalia S; Paulino Marcelo G; Baraldi Flavia G; Carraschi Silvia P; da Cruz Claudinei; Fernandes Marisa Narciso	Environmental toxicology and pharmacology, (2012 Sep) Vol. 34, No. 2, pp. 388-396. Electronic Publication Date: 31 May 2012 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Non-relevant by full text	Formulations contain POEA and therefore not relevant to the EU level ecotoxicology risk assessment for Annex I renewal.			Y
Cortisol response to acute stress in jundia Rhamdia quelen, acutely exposed to sub-lethal concentrations of agrichemicals	Cericato, Leonardo; Machado Neto, Joaquim Goncalves; Fagundes, Michele; Kreutz, Luiz Carlos; Quevedo, Rosmari Mezzalira; Finco, Jovani; Santos Da Rosa, Joao Gabriel; Koakoski, Gessi; Centenaro, Lucas; Pottker, Emanuele; Anziliero, Deniz; Barcellos, Leonar	Comparative Biochemistry and Physiology, Part C: Toxicology and Pharmacology (2008), 148C(3), 281-286	Non-relevant by full text	This publication is dealing with a Roundup formulation containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the findings are based on molecular level (cortisol in plasma) that cannot be related to the risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Detection of cytogenetic and DNA damage in peripheral erythrocytes of goldfish (<i>Carassius auratus</i>) exposed to a glyphosate formulation using the micronucleus test and the comet assay.	Cavas Tolga; Konen Serpil	Mutagenesis, (2007 Jul) Vol. 22, No. 4, pp. 263-8. Electronic Publication Date: 10 Apr 2007	Non-relevant by full text	This publication is dealing with a Roundup formulation containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the findings are based on cellular and molecular level (analysis of micronuclei and other nuclear abnormalities and a comet assay) that cannot be related to the risk assessment.	Y	Y	Y
The effects of glyphosate-based herbicide formulations on <i>Lemna minor</i> , a non-target species	Sikorski, Lukasz; Baciak, Michal; Bes, Agnieszka; Adomas, Barbara	Aquatic Toxicology (1 Apr 2019), pp. 70-80, 76 refs. CODEN: AQTOGD ISSN: 0166-445X E-ISSN: 1879-1514 DOI: 10.1016/j.aquatox.2019.01.021 Published by: Elsevier B.V.,	Non-relevant by full text	Difficult to relate the findings to an EU level risk assessment for Annex I renewal as the study was conducted on a non-EU tree species.			Y
Compatibility of conventional agrochemicals used in rice crops with the entomopathogenic fungus <i>Metarhizium anisopliae</i> .	Silva, R. A. da; Quintela, E. D.; Mascarin, G. M.; Barrigossi, J. A. F.; Liao, L. M.; da Silva, R. A.	Scientia Agricola (2013), Volume 70, Number 3, pp. 152-160, 36 refs. ISSN: 0103-9016 DOI: 10.1590/S0103-90162013000300003 Published by: Universidade de Sao Paulo, Campus "Luiz de Queiroz" (ESALQ), Piracicaba URL (Availability): http://www.scielo.br/sa	Non-relevant by full text	This paper presents the results of an agrochemical mixture study to entomopathogenic fungus. As the study was performed using a mixture the appropriate endpoints for glyphosate cannot be determined.			Y
Roundup® Herbicide Decreases Quality Parameters of Spermatozoa of <i>Silversides Odontesthes Humensis</i>	Silveira, Tony; Domingues, William B.; Santos, Lucas; Barreto, Bruna; Lessa, Ingrid; Campos, Vinicius; Farias, Varela Junior, Antonio Sergio; Boyle, Robert T.; Costa, Patricia Gomes; Bianchini, Adalto; Corcini, Carine Dahl; Martins, Diego; Remiao, Mariana;	Bulletin of Environmental Contamination and Toxicology (15 Jan 2019) Volume 102, Number 1, 39 refs. CODEN: BECTA6 ISSN: 0007-4861 E-ISSN: 1432-0800 DOI: 10.1007/s00128-018-2508-0 Published by: Springer New York LLC,	Non-relevant by full text	Observations cannot be related to an ecotoxicology risk assessment for EU renewal of glyphosate.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Fate and effects of two pesticide formulations in the invertebrate <i>Folsomia candida</i> using a natural agricultural soil	Simoes Tiago Novais Sara C Natal-da-Luz Tiago; Sousa Jose P Leston Sara Rosa Joao Ramos Fernando Pouca Ana Sofia Vila; Freitas Andreia; Barbosa Jorge Roelofs Dick; van Straalen Nico M Lemos Marco F L	The Science of the total environment, (2019 Jul 20) Vol. 675, pp. 90-97. Electronic Publication Date: 15 Apr 2019 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	The formulation used (MONTANA) contains POEA which is not relevant to the EU level ecotoxicology risk assessment for Annex I renewal.			Y
An integrative omics approach to unravel toxicity mechanisms of environmental chemicals: effects of a formulated herbicide	Simoes, Tiago; Novais, Sara C.; Natal-da-Luz, Tiago; Devreese, Bart; de Boer, Tjalf; Roelofs, Dick; Sousa, Jose P.; van Straalen, Nico M.; Lemos, Marco F. L.	Scientific Reports, (2018) Vol. 8, No. 1, pp. 1-12. CODEN: SRCEC3. ISSN: 2045-2322.	Non-relevant by full text	Study investigates the impact of a glyphosate formulation that contains POEA on <i>Folsomia</i> . This is not the formulated product for the renewal and POEA is no longer used in the EU.			Y
Immunotoxicity of commercial-mixed glyphosate in broad snouted caiman (<i>Caiman latirostris</i>).	Siroski Pablo A Poletta Gisela L Latorre Maria A Merchant Mark E Ortega Hugo H Mudry Marta D	Chemico-biological interactions, (2016 Jan 25) Vol. 244, pp. 64-70. Electronic Publication Date: 1 Dec 2015 Journal code: 0227276. E-ISSN: 1872-7786. L-ISSN: 0009-2797.	Non-relevant by full text	Monitoring endpoints not relevant to EU level ecotoxicology risk assessment			Y
Toxicity testing of three commonly used herbicides on soil-dwelling ant (Family: Formicidae - <i>Odontomachus simillimus</i>).	Siti Hanisah Zahuri; Mohd Zacaery Khalik	Borneo Journal of Resource Science and Technology (2014), Volume 4, Number 1, pp. 28-33, 22 refs. ISSN: 229-9769 Published by: Universiti Malaysia Sarawak, Sarawak URL (Availability): http://www.bjrst.unimas.my/index.php/online-issue/item/43-short-commun	Non-relevant by full text	Review, secondary information.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Dynamics of the juvenile carps hematological parameters under the impact of herbicides.	Zhydenko, A. A.	Hydrobiological Journal, (2008) Vol. 44, No. 5, pp. 73-80.	Non-relevant by full text	This publication is dealing with a "Roundup" formulation (no indication of which one) probably containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the findings are all based on cellular and molecular level (changes of the hematological parameters) that cannot be related to the risk assessment.			
Earthworm community in conventional, organic and direct seeding with living mulch cropping systems.	Pelosi, Celine; Bertrand, Michel; Roger-Estrade, Jean.	Agron. Sustainable Dev., Volume 29, Issue 2, Page 287-295, Publication Year 2009	Non-relevant by full text	In this field study comparing different cropping systems for 3 years, the observations in the glyphosate treated plots are caused by a mixture of other compounds/potentially causal factors and thus not attributable to glyphosate itself. In addition, glyphosate specifications and application details and rate were not indicated.			
Ecotoxicological assessment of the effects of glyphosate and chlortpyrifos in an Argentine soya field	Casabe, Norma; Piola, Lucas; Fuchs, Julio; Oneto, Maria Luisa; Pamparato, Laura; Basack, Silvana; Gimenez, Rosana; Massaro, Ruben; Papa, Juan C; Kesten, Eva	Journal of soils and sediments (2007) , Volume 7, Number 4, pp. 232-239 ISSN: 1439-0108 Published by: Dordrecht : Ecomed Source Note: 2007 Aug., v. 7, no. 4	Non-relevant by full text	The field phase of this publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in soya fields under open-air conditions in Argentina). In addition, the study was conducted with a Roundup formulation (Roundup FG), probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.			Y
Effects of low concentrations of glyphosate-based herbicide factor 540A® on an agricultural stream freshwater phytoplankton community	Smedbol Elise Gomes Marcelo Pedrosa Paquet Serge; Lepage Laurent; Lucotte Marc Labrecque Michel Juneau Philippe	Chemosphere (2017) ISSN: 0045-6535 Published by: Elsevier Ltd Source Note: 2017,	Non-relevant by full text	Test substance not glyphosate or ismetabolites. Paper presented based on a formulation of glyphosate that is not the representative formulation being considered for the Annex I renewal.			Y
Phytoplankton growth and PSII efficiency sensitivity to a glyphosate-based herbicide (Factor 540®)).	Smedbol Elise Lucotte Marc; Lepage Laurent Labrecque Michel Juneau Philippe	Aquatic toxicology (Amsterdam, Netherlands), (2017 Nov) Vol. 192, pp. 265-273. Electronic Publication Date: 28 Sep 2017 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Achieved end-points are not relatable to an EU level ecotoxicology risk assessment for Annex I renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Developmental and epigenetic effects of Roundup and glyphosate exposure on Japanese medaka (<i>Oryzias latipes</i>).	Smith Chelsea M; Vera Madeline K M Bhandari Ramji K	Aquatic toxicology (Amsterdam, Netherlands), (2019 May) Vol. 210, pp. 215-226. Electronic Publication Date: 7 Mar 2019 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Single application rates for glyphosate active substance considered. No specific endpoints presented that could be applied to an EU level ecotoxicology risk assessment for Annex I renewal.			Y
Effect of glyphosate herbicide on acetylcholinesterase activity and metabolic and hematological parameters in piava (<i>Leporinus obtusidens</i>).	Gluszczak, Lissandra; Miron, Denise Dos Santos; Crestani, Marcia; Da Fonseca, Milene Braga; Pedron, Fabio De Araujo; Duarte, Marta Frescura; Pimentel Vieira, Vania Lucia	Ecotoxicology and Environmental Safety, (OCT 2006) Vol. 65, No. 2, pp. 237-241. http://www.journals.elsevier.com/ecotoxicology-and-environmental-safety/#description .	Non-relevant by full text	In this literature article the effects of Roundup on acetylcholinesterase and hematological parameters in <i>Leporinus obtusidens</i> were assessed. As the findings are only based on molecular level they cannot be related to the risk assessment.			Y
Genotoxic effect of a binary mixture of dicamba- and glyphosate-based commercial herbicide formulations on <i>Rhinella arenarum</i> (Hensel, 1867) (<i>Anura</i> , <i>Bufo</i> idae) late-stage larvae.	Soloneski Sonia; Ruiz de Arcaute Celeste; Larramendy Marcelo L Soloneski Sonia; Ruiz de Arcaute Celeste; Larramendy Marcelo L	Environmental science and pollution research international, (2016 Sep) Vol. 23, No. 17, pp. 17811-21. Electronic Publication Date: 1 Jun 2016 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Despite LC50 data being present that could inform on the risk assessment - the formulation used (Credit®) is based on MON 35085, which is a 360 g/L formulation containing MON 0818, which contains POEA. These findings are therefore not relevant to the EU renewal as MON 52276 does not contain POEA.			Y
Effect of glyphosate on various blood parameters of fresh water fishes , <i>Heteropneustes fossilis</i> .	Zahra, K.; Saurabh Shreshth; Shreshth, S.	Flora and Fauna (Jhansi) (2006) , Volume 12, Number 1, pp. 100-104, 32 refs. ISSN: 0971-6920 Published by: Flora and Fauna, Jhansi	Non-relevant by full text	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. In addition, no analytical verification of the test item concentrations in the tested tap water was conducted and the origin/source of the tested fishes is not clear either.			
Effect of herbicide glyphosate on DNA , RNA and protein contents of seedlings of <i>Hibiscus cannabinus</i> Linn.	Kamble, Sanjay I. (Correspondence)	Biosciences Biotechnology Research Asia, (December 2006) Vol. 3, No. 2 A, pp. 431-436. Refs: 10 ISSN: 0973-1245	Non-relevant by full text	This publication is dealing with effects of glyphosate on macromolecular contents (DNA, RNA and protein) of treated <i>Hibiscus</i> seedlings. As the findings are based on molecular level they cannot be related to the risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effect of the herbicide ROUNDUP 360 SL on the generation time of <i>Aeromonas hydrophila</i> and <i>Pseudomonas fluorescens</i> in lake water .	Jankowska, J.; Zmysowska, I.	Polish Journal of Natural Sciences (2007) , Volume 22, Number 4, pp. 660-669, 28 refs. ISSN: 1643-9953 DOI: 10.2478/v10020-007-0056-x Published by: Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego w Olsztynie, Olsztyn URL (Availability): http://www.uwm.edu.pl/wydawnictwo/	Non-relevant by full text	This publication is dealing with effects of the representative EU formulation (Roundup 360 SL) on the generation time of the aquatic bacteria <i>Aeromonas hydrophila</i> and <i>Pseudomonas fluorescens</i> . No further endpoints were assessed and no analytical verification of the test item concentrations were conducted. As the evaluated endpoint is not regarded relevant to the risk assessment, the study was considered as not relevant.			
Effect of the herbicide Roundup on <i>Perkinsus olsenii</i> in vitro proliferation and in vivo survival when infecting a permissive host, the clam <i>Ruditapes decussatus</i> .	Elandaloussi L M; Leite R B; Rodrigues P M; Afonso R; Cancela M L	Bulletin of environmental contamination and toxicology, (2008 Jun) Vol. 80, No. 6, pp. 512-5. Electronic Publication Date: 23 Apr 2008	Non-relevant by full text	In this study the active substance glyphosate and a Roundup formulation containing POEA surfactant is tested. The study results determined for the active substance glyphosate are very limited, i.e. for the parasitic protozoa <i>Perkinsus olsenii</i> the in vitro inhibition of growth was tested and one IC50 value without confidence intervals is presented. For the Roundup formulation and the active substance glyphosate no analytical verifications of test item concentrations were conducted. As the surfactant POEA is not permitted in formulated products in the EU/Japan the determined study results for the Roundup-formulation are not regarded relevant. The study results for the active substance glyphosate are also not regarded relevant, as no analytical verification of the test concentrations were conducted, the results are very limited and the test species and test design is not regarded adequate to assess ecotoxicological relevant endpoints for the risk assessment.			Y
Toxic effects of the herbicide glyphosate on enzymes activities and histopathological changes in gill and liver tissue of freshwater fish, Silver barb (<i>Barbonymus gonionotus</i>)	Sribanjam, Sirorat; Charoenwattanasak, Siripavee; Champasri, Thongchai; Yuangsoi, Bundit; Champasri, Chamaiporn	Bioscience Research (2018) Volume 15, Number 2, pp. 1251-1260, 39 refs. ISSN 1811-9506 E-ISSN: 2218-3973 Published by: ISI Snet: Innovative Scientific Information Services Network,	Non-relevant by full text	Data presented cannot be related to an EU level ecotoxicology risk assessment for Annex I renewal purposes. Roundup contains POEA which is not present in the representative formulation for the renewal.			
Effects of glyphosate and endosulfan on soil microorganisms in soybean crop .	Pereira, J. L.; Picanco, M. C.; Silva, A. A.; Santos, E. A.; Tome, H. V. V.; Olarte, J. B.	Planta Daninha (2008) , Volume 26, Number 4, pp. 825-830, 21 refs. ISSN: 0100-8358 DOI: 10.1590/S0100-83582008000400014 Published by: Sociedade Brasileira de Ciencia das Plantas Daninhas, Vicosia URL (Availability): http://www.scielo.br/pd	Non-relevant by full text	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in open-air field plots in Brazil under local soil and climate conditions). In addition, it only focuses on microbial respiration (CO2 accumulation), which is no longer a variable to consider for the EU / Japan risk assessment			
Effects of glyphosate herbicide on soil and litter macroarthropods in rainforest: Implications for forest restoration	Nakamura, Akihiro; Catterall, Carla P; Kitching, Roger L; House, Alan P N; Burwell, Chris J	Ecological management and restoration (2008) , Volume 9, Number 2, pp. 126-133 ISSN: 1442-7001 Published by: Melbourne, Australia : Blackwell Publishing Asia Source Note: 2008 Aug., v. 9, no. 2	Non-relevant by full text	This publication is dealing with a "Roundup" formulation (Roundup® Bioactive) probably containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, this field study is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in rainforest fields under open-air conditions in Australia).			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of glyphosate on soil microbial communities and its mineralization in a Mississippi soil .	Weaver Mark A; Krutz L Jason; Zablotowicz Robert M; Reddy Krishna N	Pest management science, (2007 Apr) Vol. 63, No. 4, pp. 388-93.	Non-relevant by full text	This study consists of two different tests, one field study in USA not dealing with EU / Japan representative uses/conditions (e.g field locations, soil properties, non-EU monitoring etc.) and one laboratory study with a study design and system that are not relevant for regulatory purposes. Only C-related (and not N-related) mineralization was measured, which is no longer relevant for the risk assessment.			
Selectivity of herbicides registered for corn at the immature stages of Trichogramma pretiosum (Hymenoptera: Trichogrammatidae). Seletividade de herbicidas registrados para a cultura do milho aos estadios imaturos de Trichogramma pretiosum (Hymenoptera:	Stefanello Junior, G. J.; Grutzmacher, A. D.; Pasini, R. A.; Bonez, C.; Moreira, D. C.; Spagnol, D.	Planta Daninha (2011), Volume 29, Number Especial, pp. 1069-1077, 33 refs. ISSN: 0100-8358 DOI: 10.1590/S0100-83582011000500014 Published by: Sociedade Brasileira da Ciencia das Plantas Daninhas, Viosa URL (Availability): http://www.scielo.br/scielo.php?	Non-relevant by full text	Test species was parasitoid T. pretiosum in different immature stages (egg-larva, pre-pupal and pupal stages). However, the test solutions were sprayed onto egg-cards containing the parasitised eggs. Therefore this is not an adequate route of exposure and thus not relevant for the risk assessment.			
Effects of pesticides used in soybean crops to the egg parasitoid Trichogramma pretiosum.	Bueno, Adeney De Freitas; Oliveira De Freitas Bueno, Regiane Cristina; Postali Parra, Jose Roberto; Vieira, Simone Silva	Ciencia Rural, (SEP 2008) Vol. 38, No. 6, pp. 1495-1503. http://www.ufsm.br/ccr/revista/ . ISSN: 0103-8478. E-ISSN: 1678-4596.	Non-relevant by full text	This publication is dealing with formulations (Roundup Ready®, Roundup Transorb®, Roundup Original®, Gliz®) that are not the representative formulations for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. They probably contain the surfactant POEA or a similar one, which is not permitted in formulated herbicidal products in the EU / Japan?.			Y
Monarchs in decline: a collateral landscape-level effect of modern agriculture. Special Section: The impact of transgenic crops on protected arthropods.	Stenoien, C.; Nail, K. R.; Zalucki, J. M.; Parry, H.; Oberhauser, K. S.; Zalucki, M. P. Editor(s): Lovei, G. L.	Insect Science (2018), Volume 25, Number 4, pp. 528-541, 122 refs. ISSN: 1672-9609 DOI: 10.1111/1744-7917.12404 Published by: Wiley, Beijing	Non-relevant by full text	Concerns a review of the decline of monarch butterflies in the US. Not relatable to an EU level assessment for Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of the herbicide Roundup on freshwater microbial communities : a mesocosm study.	Perez G L; Torremorell A; Mugni H; Rodriguez P; Solange Vera M; Do Nascimento M; Allende L; Bustingorry J; Escaray R; Ferraro M; Izaguirre I; Pizarro H; Bonetto C; Morris Donald P; Zagarese H	Ecological applications : a publication of the Ecological Society of America, (2007 Dec) Vol. 17, No. 8, pp. 2310-22.	Non-relevant by full text	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in earthen ponds under open-air conditions in Argentina). In addition, it deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan?. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.			Y
Efficacy of herbicide Glyphosate on oxygen consumption of a fresh water fish , Catla catla	Saradhamani, N.; Shanthi, K.; Manimegalai, M.; Binu Kumari, S.	Indian Journal of Environment and Ecoplanning (2009), 16(1), 239-243	Non-relevant by full text	In this study, assessing the effects of glyphosate exposure on the rate of fish oxygen consumption after 96 hours, the test design and system are not relevant for the EU / Japan regulatory purposes. In addition, the test item was not identified as it was just indicated that it is glyphosate without further content/purity/source indication (it could be a formulation not relevant to the EU / Japan glyphosate renewal). The study shows several inconsistencies in the reported results' table (percent change in the rate of oxygen consumption at 72 h, significant difference detected for the 0.35 ppm concentration at 72 h, etc.) and text. The statistical analysis was not described and it is not possible to determine if it has been conducted or not.			
An approach to clarify the effect mechanism of glyphosate on body malformations during embryonic development of zebrafish (Daino rerio).	Sulkan Ekrem; Atamanalp Muhammed Kokturk Mine Ceylan Hamid Beydemir Sukru Isik Mesut Ceyhun Saltuk Bugrahan	Chemosphere, (2017 Aug) Vol. 180, pp. 77-85. Electronic Publication Date: 5 Apr 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Endpoints are not relatable to an EU level risk assessment for Annex I renewal.			Y
Ecological risks assessment of organophosphorus pesticides based on response of Scenedesmus quadricauda.	Sun KaiFeng; Wang Na; Liu LiLi; Duan ShunShan; Sun, K. F.; Wang, N.; Liu, L. L.; Duan, S. S.	China Environmental Science (2013), Volume 33, Number 5, pp. 868-873, 27 refs. ISSN: 1000-6923 Published by: Editorial Board of China Environmental Science, Beijing URL (Availability): http://www.zghjcx.com.cn	Non-relevant by full text	Endpoints not relevant to an EU level ecotoxicology risk assessment as they are not relatable.			
Environmental fate and non-target impact of glyphosate - based herbicide (Roundup) in a subtropical wetland.	Tsui M T K; Chu L M	Chemosphere, (2008 Mar) Vol. 71, No. 3, pp. 439-46. Electronic Publication Date: 26 Dec 2007	Non-relevant by full text	The Roundup formulation used in the study contains POEA surfactant which is not permitted in formulated herbicidal products in the EU / Japan. The ecotoxicologically relevant findings of this field study (in situ bioassay of fish in a freshwater & estuarine pond) cannot clearly be related to the application of the Roundup formulation as a very open test design was chosen and test species might be exposed to multiple chemicals/stressors. Environmental fate in a subtropical wetland can for various reasons not readily transferred to agricultural conditions considered relevant.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Ecological risks assessment of organophosphorus pesticides on bloom of <i>Microcystis wessenbergii</i>	Sun, Kaifeng; Liu, Weijie; Liu, Lili; Wang, Na; Duan, Shunshan	International biodeterioration & biodegradation (2013), Volume 77, pp. 98-105 ISSN: 0964-8305 Published by: Elsevier Ltd Source Note: 2013 Feb., v. 77	Non-relevant by full text	Endpoints measured are not relevant or relatable to an EU level Annex I ecotoxicological risk assessment.			Y
Herbicides effect on fish mortality and water quality in relation to chemical control of alligator weed.	Sushilkumar; Shobha Sondhia; Kamlesh Vishwakarma; Sondhia, S.; Vishwakarma, K.	Indian Journal of Weed Science (2017), Volume 49, Number 4, pp. 396-400, 20 refs. ISSN: 0253-8040 Published by: Indian Society of Weed Science, Jabalpur URL (Availability): http://isws.org.in/IJWSn/File/2017_49_Issue-4_396-400.pdf	Non-relevant by full text	Methods and end-points not relatable to EU level ecotoxicology assessment for renewal purposes.			
Chemical control of duck weed and its effect on water quality and residue.	Sushilkumar; Shobha Sondhia; Sondhia, S.	Indian Journal of Weed Science (2017), Volume 49, Number 1, pp. 105-107, 12 refs. ISSN: 0253-8040 Published by: Indian Society of Weed Science, Jabalpur URL (Availability): http://isws.org.in/IJWSn/File/2017_49_Issue-1_105-107.pdf	Non-relevant by full text	Difficult to relate observed findings to an EU level risk assessment for Annex I renewal.			
Environmental influences on <i>Acinetobacter</i> sp. strain BD413 transformation in soil	Watson, Stephanie K; Carter, Philip E	Biology and fertility of soils (2008), Volume 45, Number 1, pp. 83-92 ISSN: 0178-2762 Published by: Berlin/Heidelberg : Springer-Verlag Source Note: 2008 Oct., v. 45, no. 1	Non-relevant by full text	In this literature article the effects of Roundup Ready Renew on <i>Acinetobacter</i> sp. strain BD413 transformation in soil were assessed. As the findings are only based on molecular level they cannot be related to the risk assessment.			
The influence of three different types of herbicides on biodiversity	Tang, Yongchao; Mao, Shengfeng; Ma, Xueqing; Qiu, Mimi; Ma, Kai; Zhu, Mengxuan; Wang, Zhengjia	Advanced Materials Research (Dürnten-Zürich, Switzerland), (2014) Vol. 838-841, pp. 2417-2426. CODEN: AMREFI. ISSN: 1662-8985.	Non-relevant by full text	Information presented is not directly relevant to the ecotoxicology risk assessment for Annex I renewal			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Genotoxic effects of Roundup on the fish <i>Prochilodus lineatus</i> .	Cavalcante D G S M; Martinez C B R; Sofia S H	Mutation research, (2008 Aug-Sep) Vol. 655, No. 1-2, pp. 41-6.	Non-relevant by full text	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the findings are only based on cellular and molecular level that cannot be related to the risk assessment.	Y	Y	Y
Impact, recovery and carryover effect of Roundup® on predator recognition in common spiny loach, <i>Lepidocephalichthys thermalis</i> .	Tapkir Sandip D; Kharat Sanjay S; Kumkar Pradeep; Gosavi Sachin M; Tapkir Sandip D; Gosavi Sachin M; Gosavi Sachin M	Ecotoxicology (London, England), (2019 Mar) Vol. 28, No. 2, pp. 189-200. Electronic Publication Date: 10 Jan 2019 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	The formulation is not the representative formulation being used for the Annex I. Its identity cannot be confirmed. The observed effects based on reactions to non-specific alarms / cues cannot be related to an EU level ecotoxicology risk assessment for Annex I renewal.			Y
Glyphosate and glyphosate - resistant crop interactions with rhizosphere microorganisms	Kremer, Robert J; Means, Nathan E	European journal of agronomy (2009) , Volume 31, Number 3, pp. 153-161 ISSN: 1161-0301 Published by: Amsterdam, the Netherlands: Elsevier Science Pub. Co. Source Note: 2009 Oct., v. 31, no. 3	Non-relevant by full text	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the test was conducted in open-air fields in US under local soil and climate conditions). In addition, glyphosate specifications were not indicated (no details on the used formulation). This work does not present any numerical/tabulated result, just graphical outcomes.			
The influence of selected pesticides on the growth of entomopathogenic fungi from the entomophthoralean order (Entomophthorales). Wpływ wybranych środków ochrony roślin na wzrost grzybow owadobojczych z rzędu owadomorkowców (Entomophthorales).	Tkaczuk, C.; Majchrowska-Safaryan, A.; Sledz, K.	Annales Universitatis Mariae Curie-Skłodowska. Sectio E, Agricultura (2016), Volume 71, Number 1, pp. 65-75, 31 refs. ISSN: 0365-1118 Published by: Wydawnictwo Uniwersytetu Przyrodniczego, Lublin URL (Availability): http://wydawnictwo.up.lublin.pl/annales/	Non-relevant by full text	Test design not relevant to an EU level ecotoxicology risk assessment to support Annex I renewal.			
Histopathologic Biomarker Response of Clam, <i>Ruditapes decussates</i> , to Organophosphorous Pesticides Reldan and Roundup: A Laboratory Study.	El-Shenawy, Nahla S.; Moawad, Tarak. I. S.; Mohallal, Mahmoud E.; Abdel-Nabi, Ismail M.; Taha, Inas A.	Ocean Science Journal, (MAR 2009) Vol. 44, No. 1, pp. 27-34. http://osj.kordi.re.kr/ . ISSN: 1738-5261. E-ISSN: 2005-7172.	Non-relevant by full text	This publication does not provide any numerical/graphical result, just digital images of histopathological changes without any measure of these changes and no relation with related chronic toxicological effects. In addition, this publication is dealing with a Roundup formulation most probably containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of glyphosate on juvenile rainbow trout (<i>Oncorhynchus mykiss</i>): transcriptional and enzymatic analyses of antioxidant defence system, histopathological liver damage and swimming performance.	Topal Ahmet Atamanalp Muhammed; Ucar Arzu; Kocaman Esat Mahmut Oruc Ertan Sulukan Ekrem; Ceyhan Saltuk Bugrahan Akdemir Fatih Beydemir Sukru; Kilinc Namik Erdogan Orhan	Ecotoxicology and environmental safety, (2015 Jan) Vol. 111, pp. 206-14. Electronic Publication Date: 29 Oct 2014 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Cellular and molecular level results, not considered relevant to EU level ecotoxicology risk assessment.			Y
Histopathological responses of the gill and liver tissues of <i>Clarias gariepinus</i> fingerlings to the herbicide, glyphosate .	Olurin, K. B.; Olojo, E. A. A.; Mbaka, G. O.; Akindele, A. T.	African Journal of Biotechnology, (DEC 18 2006) Vol. 5, No. 24, pp. 2480-2487. ISSN: 1684-5315.	Non-relevant by full text	This publication does not provide any numerical/graphical result, just digital images of histopathological changes without any measure of these changes and no relation with related chronic toxicological effects. In addition, this publication does not identify the tested formulation.			
Human health and environmental risks from the use of glyphosate formulations to control the production of coca in Colombia: overview and conclusions.	Solomon Keith R; Marshall E J P; Carrasquilla Gabriel	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 914-20. Ref: 50	Non-relevant by full text	This is a scientific review article where no new data, just secondary information, is provided that can be used for risk assessment. In addition, most of the effects reported in this review were caused by mixture of compounds / potentially causal factors and thus not attributable to glyphosate itself.			
Lethal and Sublethal Effects of Glyphosate (Roundup (R) Active) to Embryos of Colombian Anurans. Original Title: EFECTOS LETALES Y SUBLETALES DEL GLIFOSATO (ROUNDUP (R) ACTIVO) EN EMBRIONES DE ANUROS COLOMBIANOS.	Triana Velasquez, Teofila Maria; Montes Rojas, Claudia Marsela; Bernal Bautista, Manuel Hernando [Reprint Author]	Acta Biologica Colombiana, (MAY-AUG 2013) Vol. 18, No. 2, pp. 271-278. http://www.scielo.org.co/revistas/abc/aboutj.htm . ISSN: 0120-548X. E-ISSN: 1900-1649.	Non-relevant by full text	The formulation data presented in the paper are for a formulation that is not the representative formulation for the Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Impact of Roundup on the marine microbial community, as shown by an in situ microcosm experiment.	Stachowski-Haberkorn Sabine; Becker Beatriz; Marie Dominique; Haberkorn Hansy; Coroller Louis; De La Broise Denis	Aquatic toxicology (Amsterdam, Netherlands), (2008 Sep 29) Vol. 89, No. 4, pp. 232-41. Electronic Publication Date: 18 Jul 2008	Non-relevant by full text	This publication deals with a Roundup formulation, containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan.			
Impact of glyphosate and benzo[a]pyrene on the tolerance of mosquito larvae to chemical insecticides. Role of detoxification genes in response to xenobiotics.	Riaz, Muhammad Asam; Poupardin, Rodolphe; Reynaud, Stephane; Strode, Clare; Ranson, Hilary; David, Jean-Philippe.	Aquat. Toxicol., Volume 93, Issue 1, Page 61-69, Publication Year 2009	Non-relevant by full text	This study investigates the tolerance of mosquito larvae to several insecticides, having been exposed previously to sub-lethal concentrations of glyphosate. The glyphosate tested substance is Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. The direct glyphosate effects on mosquitos conferring increased tolerance to insecticides were assessed only at cellular and molecular level that cannot be related to the risk assessment.			Y
Acute toxicity of Delsate® herbicide (glyphosate) on albumin and blood urea nitrogen of African catfish, <i>Clarias gariepinus</i> (Burchell, 1822).	Udeh, G. N.; Oti, E. E.	Journal of Aquatic Sciences (2014), Volume 29, Number 2, pp. 309-315 ISSN: 0189-8779 Published by: Association for Aquatic Sciences of Nigeria (AASN), Jos URL (Availability): http://journalofaquaticsciences.com/index.php/journals/current-issue2/2014-vol-	Non-relevant by full text	Test item is a formulation other than the representative formulation.			
Behavioural and some physico-chemical assessment of fresh water catfish <i>Clarias gariepinus</i> (Burchell, 1822) exposed to acute concentrations of Delsate® herbicide (glyphosate).	Udeh, G. N.; Oti, E. E.	Journal of Aquatic Sciences (2014), Volume 29, Number 2, pp. 275-283 ISSN: 0189-8779 Published by: Association for Aquatic Sciences of Nigeria (AASN), Jos URL (Availability): http://journalofaquaticsciences.com/index.php/journals/current-issue2/2014-vol-	Non-relevant by full text	Contains a surfactant system that is not relevant to the EU level ecotoxicology risk assessment for renewal of MON 52276 onto Annex I.			
No observable effect of a glyphosate-based herbicide on two top predators of temporal water bodies.	Ujszegi Janos Gal Zoltan; Miko Zsanett; Hettyey Attila	Environmental toxicology and chemistry, (2015 Feb) Vol. 34, No. 2, pp. 307-13. Electronic Publication Date: 24 Dec 2014 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	The test substance contains polyethoxylated tallowamine surfactant, which is not allowed in herbicidal formulations in the EU. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
NO EFFECT OF A GLYPHOSATE-BASED HERBICIDE ON LARVAL DRAGONFLIES (AESHNA CYANEA) AND ADULT NEWTS (LISSOTRITON VULGARIS) IN A LABORATORY-BASED EXPERIMENT.	Ujszegi, Janos [Reprint Author]; Gal, Zoltan; Miko, Zsanett; Hettyey, Attila	Acta Zoologica Academiae Scientiarum Hungaricae, (2016) Vol. 62, No. 4, pp. 355-367. http://actazool.nhmus.hu . ISSN: 1217-8837.	Non-relevant by full text	The test substance contains polyethoxylated tallowamine surfactant, which is not allowed in herbicidal formulations in the EU. Due to the test materials not being the representative formulation for the EU renewal, the study is not relevant to the EU level Annex I ecotoxicology risk assessment.			Y
Impact of herbicide (glyphosate) on the biochemical components of the fish , Catla catla	Kumari, S. Binu; Surendran, Deula J.; Manimegalai, M.; Umavathi, S.	Indian Journal of Environment and Ecoplanning, (2008) Vol. 15, No. 1-2, pp. 434-438. CODEN: IJECH. ISSN: 0972-1215.	Non-relevant by full text	This publication deals with the Glycel® formulation, containing ethoxylated tallow alkyl amines surfactant, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, all findings of this study are based on cellular and molecular level that cannot be related to the risk assessment.			
Influence of glyphosate and its formulation (Roundup super([registered])) on the toxicity and bioavailability of metals to Ceriodaphnia dubia	Tsui, Martin T.K.; Wang, Wen-Xiong; Chu, L.M.	Environmental Pollution. Vol. 140, no. 2, pp. 59-68. Mar. 2006 ISSN: 0269-7491 DOI: 10.1016/j.envpol.2005.02.018 Published by: Elsevier Science Publishing Co , Inc , P.O. Box 882, Madison Square Station, New York, NY, 10159-0882, USA, [mailto:usinfo-f els	Non-relevant by full text	In this study, the observations related with glyphosate (IPA salt) were caused by mixture of compounds (metal acute toxicity and accumulation on aquatic invertebrates when previously treated with glyphosate) and thus not attributable to glyphosate itself (e.g. mixture toxicity). The 48-h LC50 was calculated however for Roundup® and therefore dealing with a formulation containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.			
Acute toxicity effect of glyphosate on survival rate of common carp, Cyprinus carpio	Vajargah, Mohammad Forouhar; Yalsuyi, Ahmad Mohamadi; Sattari, Masoud; Hedayati, Aliakbar	Environmental Health Engineering and Management Journal, (2018) Vol. 5, No. 2, pp. 61-66. CODEN: EHEMAF. ISSN: 2423-4311.	Non-relevant by full text	Non-representative formulation (Glyphosate Aria 41% SL) was tested. The test conditions throughout the whole exposure period were not documented. No information on source and composition of test media reported. There was no analytical verification of test concentrations reported and the study is not conducted according to a recognised test guideline. No validity criteria are stated so the validity of the study cannot be confirmed The size of the fish used in the test results in a fish loading rate of 1.23 g fish/Litre, which exceeds the loading rate required by internationally recognised fish testing guidelines. The testing design is not properly described i.e. whether a static, static renewal or flow through test design was used. The water quality parameters measured would suggest that the environmental conditions were maintained for the exposure duration, although this can also not be confirmed from the information presented. The water temperature being maintained at 26±1 °C, exceeds the upper temperature limit for testing with Cyprinus carpio (24 °C).			
Influences of environmental factors and antidote addition on glyphosate toxicity to freshwater fish , Labeo rohita (Hamilton)	Chattopadhyay, Amita; Adhikari, S; Adhikary, S P; Ayyappan, S	Chemistry and Ecology [Chem. Ecol.]. Vol. 23, no. 4, pp. 279-287. Aug. 2007. ISSN: 0275-7540 E-ISSN: 1029-0370 DOI: 10.1080/02757540701517845 Published by: Taylor and Francis, 11 New Fetter Lane London EC4P 4EE UK, [mailto:info tandf.co.uk], [URL:http://ww	Non-relevant by full text	This publication deals with the Glycel® formulation, containing ethoxylated tallow alkyl amines surfactant, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, most observations are addressing the effects of a mixture of potentially causal factors (pH, calcium, salinity) and thus not fully attributable to glyphosate itself. The exposure time of the fish to the fresh or aged residues of glyphosate in water is not given and the applied concentration is not clear (12.3 L a.i/ha/m).			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Bioaccumulation, physiological and ultrastructural effects of glyphosate in the lichen <i>Xanthoria parietina</i> (L.) Th. Fr.	Vannini Andrea; Guarnieri Massimo; Paoli Luca; Loppi Stefano; Sorbo Sergio; Basile Adriana	Chemosphere, (2016 Dec) Vol. 164, pp. 233-240. Electronic Publication Date: 31 Aug 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Article discusses the use of lichens as a bioindicator model of glyphosate exposure. Not relatable to an EU level ecotoxicology risk assessment for the renewal of Glyphosate onto Annex I in the EU.			Y
Interactions between glyphosate and autochthonous soil fungi surviving in aqueous solution of glyphosate .	Krzysko-Lupicka Teresa; Sudol Teresa	Chemosphere, (2008 Apr) Vol. 71, No. 7, pp. 1386-91. Electronic Publication Date: 4 Jan 2008	Non-relevant by full text	The tested material was not identified (just that N-Phosphonomethylglycine used in this study was obtained from commercial formulation by precipitation from its aqueous solution with concentrated hydrochloric acid). In addition, the exposure route (10 grams soil samples were suspended in 90 ml of 1 mM glyphosate solution) is not clear (for how much time?) and seems to not be relevant for EU / Japan regulatory purposes.			Y
Is mixture toxicity measured on a biomarker indicative of what happens on a population level? A study with <i>Lemna minor</i> .	Cedergreen, Nina; Abbaspoor, Majid; Sorensen, Helle; Streibig, Jens C.	Ecotoxicology and Environmental Safety, (JUL 2007) Vol. 67, No. 3, pp. 323-332. http://www.journals.elsevier.com/ecotoxicology-and-environmental-safety/#description .	Non-relevant by full text	The observations presented in this study were caused by mixture of different herbicides and thus not attributable to glyphosate itself (e.g. mixture toxicity). Glyphosate alone data were calculated (mean growth and mean pigment EC50 for <i>Lemna minor</i>), but no data/values were given, just graphical representations.			
Impact of glyphosate on biochemical constituents of the freshwater fish, catla catla	Veeraiah, K.; Padmaja, B.; Sai Ram, V.; Naga Prasanna, M.; Vivek, Ch.	International Journal of Bioassays, (2015) Vol. 4, No. 7, pp. 4139-4144. CODEN: IJBNIY. ISSN: 2278-778X.	Non-relevant by full text	Formulation is not the representative formulation for the Annex I renewal.			
<i>Lemna minor</i> L. as a model organism for ecotoxicological studies performing 1H NMR fingerprinting.	Aliferis Konstantinos A.; Materzok Sylwia; Paziotou Georgia N.; Chrysayi-Tokousbalides Maria	Chemosphere, (2009 Aug) Vol. 76, No. 7, pp. 967-73. Electronic Publication Date: 13 May 2009	Non-relevant by full text	This study presents findings regarding metabolites and therefore only based on cellular and molecular level that cannot be related to the risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Direct and indirect effects of the glyphosate formulation Glifosato Atanor® on freshwater microbial communities.	Vera Maria Solange Di Fiori Eugenia; Lagomarsino Leonardo; Sinistro Rodrigo; Escaray Roberto; Iummato Maria Mercedes; Juarez Angela; Rios de Molina Maria del Carmen; Tell Guillermo; Pizarro Haydee	Ecotoxicology (London, England), (2012 Oct) Vol. 21, No. 7, pp. 1805-16. Electronic Publication Date: 27 Apr 2012 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	On review of the paper, the findings of the study conducted in Argentina were difficult to relate to the EU level ecotoxicology risk assessment. The formulation used differs to the representative formulation for the Annex I in the EU.			Y
Evaluation of the genotoxic and cytotoxic effects of glyphosate-based herbicides in the ten spotted live-bearer fish <i>Cnesterodon decemmaculatus</i> (Jenyns, 1842).	Vera-Candioti Josefina Soloneski Sonia; Larramendy Marcelo L	Ecotoxicology and environmental safety, (2013 Mar) Vol. 89, pp. 166-73. Electronic Publication Date: 25 Dec 2012 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Formulations used are not relevant to the Annex I renewal of glyphosate in the EU.	Y		Y
How Glyphosate Impairs Liver Condition in the Field Lizard <i>Podarcis siculus</i> (Rafinesque-Schmaltz, 1810): Histological and Molecular Evidence.	Verderame Mariailaria; Scudiero Rosaria	BioMed research international, (2019) Vol. 2019, pp. 4746283. Electronic Publication Date: 14 May 2019 Journal code: 101600173. E-ISSN: 2314-6141. Report No.: PMC-PMC6536989.	Non-relevant by full text	Sub-lethal endpoints based on blood chemistry analysis are not relatable to an EU level Annex I risk assessments.			
Low toxic herbicide Roundup induces mild oxidative stress in goldfish tissues.	Lushchak Oleh V; Kubrak Olha I; Storey Janet M; Storey Kenneth B; Lushchak Volodymyr I	Chemosphere, (2009 Aug) Vol. 76, No. 7, pp. 932-7. Electronic Publication Date: 17 May 2009	Non-relevant by full text	The glyphosate tested substance in this study is a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. The Roundup formulation is not known. The effects were assessed only at cellular and molecular level that cannot be related to the risk assessment.	Y		Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Microbial respiration in soils of the Argentine pampas after metsulfuron methyl, 2,4-D, and glyphosate treatments.	Zabaloy, M C; Gomez, M A	Communications in soil science and plant analysis (2008) , Volume 39, Number 3-4, pp. 370-385 ISSN: 0010-3624 Source Note: 2008 Feb., v. 39, no. 3-4	Non-relevant by full text	This publication does not deal with EU / Japan representative uses / conditions (e.g. Argentinian field locations with specific soil properties, etc.). In addition, the study focuses on the effects on microbial respiration (CO2 release) and this is not a data requirement according to EU Regulation 283/2013 anymore. Furthermore, the test item was not fully identified and the test soil had a previous history of pesticide applications that could have altered the diversity and levels of the microbial community.			
Translocation and Root Exudation of Glyphosate by Urochloa brizantha and its Transport on Sugarcane and Citrus Seedlings	Viti, M L ; Alves, Pat ; Mendes, K F ; PIMPINATO, R F ; GUIMARAES, ACD ; TORNISIELO, V L	Planta Daninha, Vol. 37, 20190101 ISSN: 0100-8358 E-ISSN: 1806-9681 DOI: 10.1590/s0100-83582019370100030 Published by: Sociedade Brasileira da Ciencia das Plantas Daninhas, UFV - Depto de Fitotecnica, Jaboticabal	Non-relevant by full text	Paper discusses the translocation potential of glyphosate via the root zone, after application to palisade grass planted in association with sugar-cane. No endpoints relevant for an EU level ecotoxicology assessment.			
Investigation of genotoxic effect of herbicide Randap 480 ec at goldfish (Carassius auratus)	Vilasaku, Ilmije; Ismail; Hamit, Kurteshi, Kemaji; Mulaki, Samir; Krasniqi, Agron	International Journal of Pharmaceutical Sciences Review and Research, (2018) Vol. 48, No. 1, pp. 7/1-7/3. CODEN: IJPSRR. ISSN: 0976-044X.	Non-relevant by full text	Identity of the formulated product used is not the same as the representative formulation being considered for the Annex I.			
Influence of agro-environmental pollutants on a biocontrol strain of Bacillus velezensis	Voeroes, Monika; Manczinger, Laszlo; Kredics, Laszlo; Szekeres, Andras; Shine, Kadaikunnan; Alharbi, Naiyf S.; Khaled, Jamal M.; Vagvoelgyi, Csaba	MicrobiologyOpen, (2019) Vol. 8, No. 3, pp. e660. CODEN: MICRGJ. ISSN: 2045-8827.	Non-relevant by full text	This paper discusses the impact of glyphosate on pesticide resistance strains of biocontrol agents. This is not considered relevant to an EU level ecotoxicology risk assessment for EU Annex I renewal.			
NMR-based metabolomics using earthworms as potential indicators for soil health	Rochfort, Simone J. (Reprint); Ezernieks, Vilnis; Yen, Alan L. Rochfort, Simone J. (Reprint) Rochfort, Simone J. (Reprint); Ezernieks, Vilnis Yen, Alan L.	METABOLOMICS, (MAR 2009) Vol. 5, No. 1, pp. 95-107. ISSN: 1573-3882.	Non-relevant by full text	This study presents findings regarding metabolics and therefore only based on cellular and molecular level that cannot be related to the risk assessment. In addition, the tested material comes from different sites in Australia and therefore not dealing with EU / Japan representative uses / conditions (e.g. field locations, soil properties, etc.). Furthermore, the test item was Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan, and the observations are caused by mixture of compounds / potentially causal factors and thus not attributable to only glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Influence of herbicides and fungicides in the carpogenic germination of sclerotia of <i>Sclerotinia sclerotiorum</i> (Lib.) de Bary. Influencia de herbicidas e fungicidas na germinação carpogénica de escleródios de <i>Sclerotinia sclerotiorum</i> (Lib.) de Bary.	Vrisman, C. M.; Hueller, G. de C.; Sartori, F. F.; Henneberg, L.; Wutzki, C. R.; Juliatti, F. C.; Jaccoud Filho, D. de S.; de S. Jaccoud Filho, D.	Bioscience Journal (2014), Volume 30, Number 2, pp. 477-483, 16 refs. ISSN: 1516-3725 Published by: Universidade Federal de Uberlândia, Uberlândia URL (Availability): http://www.seer.ufu.br/index.php/biosciencejournal/article/view/23103/13800	Non-relevant by full text	Study describes the impact of multiple pesticides on the germination of <i>Sclerotinia sclerotiorum</i> - a soil fungus. The end-points are not useable in an EU level Annex ecotox risk assessment. 400 L/ha (if this were the representative formulation) would be equivalent to 1440 kg/ha significantly higher than any application rate proposed. Therefore this is not relatable to EU level ecotoxicology risk assessment.			
Effects of water contamination on site selection by amphibians: experiences from an arena approach with European frogs and newts.	Wagner Norman Lotters Stefan	Archives of environmental contamination and toxicology, (2013 Jul) Vol. 65, No. 1, pp. 98-104. Electronic Publication Date: 2 Feb 2013 Journal code: 0357245. E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Non-relevant by full text	Novel choice / avoidance end-point data are not considered as part of an EU level ecotoxicology risk assessment for Annex I renewal.			
Population and life-stage-specific effects of two herbicide formulations on the aquatic development of European common frogs (<i>Rana temporaria</i>).	Wagner Norman; Veith Michael; Lotters Stefan; Viertel Bruno	Environmental toxicology and chemistry, (20170100) Vol. 36, No. 1, pp. 190-200. Electronic Publication Date: 29 Jul 2016 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	The study was not conducted to GLP, but it is well documented according to ASTM standard protocol. The authors state that in all 3 breeding ponds, glyphosate was detected but not aminomethylphosphonic. However, the non EU representative glyphosate formulation, Roundup® UltraMax, was tested. Therefore study only provides supportive information.			Y
Effects of a commonly used glyphosate-based herbicide formulation on early developmental stages of two anuran species.	Wagner Norman; Viertel Bruno Muller Hendrik	Environmental science and pollution research international, (2017 Jan) Vol. 24, No. 2, pp. 1495-1508. Electronic Publication Date: 26 Oct 2016 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Not the representative formulation for the Annex I renewal. Therefore not relevant to EU renewal.			Y
Corrigendum [Erratum to document cited in CA166:057881]	Wagner, Norman; et al.	Environmental Toxicology and Chemistry, (2017) Vol. 36, No. 1, pp. 276. CODEN: ETODCK. ISSN: 0730-7268.	Non-relevant by full text	This is a corrigendum for an article (No. 2248), which is classified as non-relevant.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Acute Toxicity and Oxidative Stress of Two Herbicides on Earthworm <i>Eisenia fetida</i> .	Wang Feifei; Zheng Mengmeng; Liu Shuhai; Zhang Qingming [Reprint Author]	Asian Journal of Ecotoxicology, (DEC 2014) Vol. 9, No. 6, pp. 1210-1218. ISSN: 1673-5897.	Non-relevant by full text	The achieved acute end-points are not considered relevant to an EU level ecotox risk assessment for renewal purposes.			
Oxidative stress biomarkers and heart function in bullfrog tadpoles exposed to Roundup Original.	Costa Monica J; Monteiro Diana A; Oliveira-Neto Abilio L; Rantin Francisco T; Kalinin Ana L	Ecotoxicology (London, England), (2008 Apr) Vol. 17, No. 3, pp. 153-63. Electronic Publication Date: 7 Nov 2007	Non-relevant by full text	This publication deals with a Roundup formulation, containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan.	Y		Y
Acute Toxicity of Twenty-Two Commonly Used Herbicides to Earthworm (<i>Eisenia fetida</i>).	Wang Yanhua; Yu Weihua; Yang Lizhi; Cang Tao; Yu Ruixian; Wang Qiang; Zhao Xueping [Reprint Author]	Asian Journal of Ecotoxicology, (JUN 2012) Vol. 7, No. 3, pp. 317-325. ISSN: 1673-5897.	Non-relevant by full text	The achieved acute endpoints are not considered relevant to an EU level ecotoxicology risk assessment for renewal purposes.			
Joint Toxicity of Arsenic, Glyphosate and Dichlorvos to <i>C. elegans</i> .	Wang Yunbiao [Reprint Author]; Li Runqin; Deng Mingqin; Li Zhuheng; Xu Jingbo	Asian Journal of Ecotoxicology, (APR 2013) Vol. 8, No. 2, pp. 262-267. ISSN: 1673-5897.	Non-relevant by full text	Mixture study with arsenic.			
Toxicological effects of glyphosate to <i>Pyramidomonas delicatula</i> and <i>Alexandrium tamarense</i> in water environment	Wang, Hong-bin; Song, Xiu-mei; Ding, Yuan; Wu, Yan; Yan, Bin-lun	Nongyao, (2014) Vol. 53, No. 1, pp. 45-48. CODEN: NONGFP. ISSN: 1006-0413.	Non-relevant by full text	End-points are not relatable to an EU level Annex I ecotoxicology risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Responses of invertebrates to herbicide in <i>Salix cinerea</i> invaded wetlands: Restoration implications	Watts, Corinne; Danny Thornburrow; Vanessa Cave	Ecological management & restoration (2016), Volume 17, Number 3, pp. 243-249 ISSN: 1442-7001 Published by: John Wiley & Sons, Ltd Source Note: 2016 Sept., v. 17, no. 3	Non-relevant by full text	Non-EU monitoring study. Extrapolation to EU is difficult.			Y
Global transcriptomic profiling demonstrates induction of oxidative stress and of compensatory cellular stress responses in brown trout exposed to glyphosate and Roundup.	Webster, T. M. U.; Santos, E. M.	BMC Genomics (2015), Volume 16, Number 32, (31 January 2015) p., 65 refs. ISSN: 1471-2164 Published by: BioMed Central Ltd, London URL (Availability): http://www.biomedcentral.com/content/pdf/s12864-015-1254-5.pdf	Non-relevant by full text	No data relevant to the EU data requirements is presented and therefore does not support the EU level renewal of glyphosate.			
The effect of willow control using a glyphosate formulation on aquatic invertebrates within a New Zealand wetland	Wech, Janine; Alastair Suren; Cathy Kilroy; Matthew Brady	New Zealand journal of marine and freshwater research (2018), Volume 52, Number 1, pp. 16-41 ISSN: 1175-8805 Published by: Taylor & Francis Source Note: 2018 Jan. 2, v. 52, no. 1	Non-relevant by full text	Multi-year environmental monitoring project conducted in New Zealand. Not relatable to EU level risk assessment.			
A glyphosate-based herbicide induces sub-lethal effects in early life stages and liver cell line of rainbow trout, <i>Oncorhynchus mykiss</i> .	Weeks Santos Shannon; Gonzalez Patrice; Cormier Bettie; Clerandeanu Christelle; Morin Benedicte; Mazzella Nicolas; Bonnaud Bertille; Morin Soizic; Cachot Jerome	Aquatic toxicology (Amsterdam, Netherlands), (2019 Nov) Vol. 216, pp. 105291. Electronic Publication Date: 5 Sep 2019 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	Non-standard test design and results that cannot be related to an EU level risk assessment for EU renewal purposes.			Y
Pesticide usage on the Southern High Plains and acute toxicity of four chemicals to the fairy shrimp <i>Thamnocephalus platyurus</i> (crustacea: anostraca).	Brausch, John M.; Cox, Stephen; Smith, Philip N.	Tex. J. Sci., Volume 58, Issue 4, Page 309-324, Publication Year 2006	Non-relevant by full text	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Predator cues and an herbicide affect activity and emigration in an agrobiont wolf spider.	Wriinn Kerri M Evans Samuel C; Rypstra Ann L	Chemosphere, (2012 Apr) Vol. 87, No. 4, pp. 390-6. Electronic Publication Date: 4 Jan 2012 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Discusses results of experiments conducted using a formulation of gly that contains POEA. NOT relevant to EU risk assessment			Y
Physiological effects of the herbicide glyphosate on the cyanobacterium <i>Microcystis aeruginosa</i> .	Wu Liang; Qiu Zhihao; Du Yuping; Liu Chaonan Zhou Ya Ye Jing; Hu Xiaojun	Aquatic toxicology (Amsterdam, Netherlands), (2016 Sep) Vol. 178, pp. 72-9. Electronic Publication Date: 21 Jul 2016 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	End-points presented cannot be used in the EU level renewal risk assessment for glyphosate from an ecotoxicology perspective.			Y
Relating olfactory neurotoxicity to altered olfactory-mediated behaviors in rainbow trout exposed to three currently-used pesticides.	Tierney Keith B; Singh Christopher R; Ross Peter S; Kennedy Christopher J	Aquatic toxicology (Amsterdam, Netherlands), (2007 Feb 15) Vol. 81, No. 1, pp. 55-64. Electronic Publication Date: 21 Nov 2006	Non-relevant by full text	This publication deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the study design and test system (focused on olfactory-mediated behavioral effects) are not relevant for regulatory purposes.			Y
Reproducibility of binary-mixture toxicity studies.	Cedergreen, N.; Kudsk, P.; Mathiassen, S. K.; Sorensen, H.; Streibig, J. C.	Environmental Toxicology and Chemistry (2007) , Volume 26, Number 1, pp. 149-156, 23 refs. ISSN: 0730-7268 DOI: 10.1897/06-196R.1 Published by: Society of Environmental Toxicology and Chemistry (SETAC), Pensacola URL (Availability): http://www.setac.org	Non-relevant by full text	The observations presented in this study were caused by mixture of different herbicides and thus not attributable to glyphosate itself (e.g. mixture toxicity). Glyphosate alone data (EC50) were also calculated for Lemna minor, but no data/values were given, just graphical representations. For Tripleurospermum inodorum, a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan, was used. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.			
Short-term effects on macroinvertebrates and fishes of herbiciding and mowing <i>Phragmites australis</i> -dominated tidal marsh.	Fell, Paul E.; Warren, R. Scott; Curtis, Annie E.; Steiner, Erin M.	Northeastern Naturalist, (2006) Vol. 13, No. 2, pp. 191-212. ISSN: 1092-6194.	Non-relevant by full text	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the field survey was conducted in 50 ha of marshland in US). In addition, it deals with a Rodeo formulation in combination with the aquatic surfactant Chem Surf. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. The observations are also caused by a mixture of potentially causal factors and thus not only attributable to glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Toxic and genotoxic effects of Roundup on tadpoles of the Indian skittering frog (<i>Euphlyctis cyanophlyctis</i>) in the presence and absence of predator stress.	Yadav Sushama Singh Giri Sarbani; Singha Utsab; Boro Freeman; Giri Anirudha	Aquatic toxicology (Amsterdam, Netherlands), (2013 May 15) Vol. 132-133, pp. 1-8. Electronic Publication Date: 8 Feb 2013 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Non-relevant by full text	The Roundup formulation tested contains POEA, therefore not relevant to the EU level Annex I renewal from an ecotoxicology perspective.	Y		Y
Soil Microbial Activity Is Affected by Roundup WeatherMax and Pesticides Applied to Cotton (<i>Gossypium hirsutum</i>)	Lancaster, S H; Haney, R L; Senseman, S A; Hons, F M; Chandler, J M	Journal of agricultural and food chemistry (2006) , Volume 54, Number 19, pp. 7221-7226, Electronic ISSN: 0021-8561 Source Note: 2006 Sept 20, v. 54, no. 19	Non-relevant by full text	The observations presented in this study were caused by mixture of different herbicides and thus not attributable to glyphosate itself (e.g. mixture toxicity). Glyphosate alone data were also provided (only graphically), but a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan, was used. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal.			
Toxic effects of four commonly-used agrochemicals on <i>Arma chinensis</i> and <i>Picromerus lewisii</i> .	Yang ZaiYou; Li XiWang; Jia FangZhao; Wang MingXu; Yang JianYou; Yi ZhongJing; Zhang ChangHua; Yang, Z. Y.; Li, X. W.; Jia, F. Z.; Wang, M. X.; Yang, J. Y.; Yi, Z. J.; Zhang, C. H.	Agricultural Biotechnology (2018), Volume 7, Number 5, pp. 153-155, 158, 15 refs. ISSN: 2164-4993 Published by: Wu Chu (USA-China) Science and Culture Media Corporation, Cranston	Non-relevant by full text	Test item is a glyphosate formulation that is not the representative formulation for the Annex I renewal.			
Soil microbial biomass, functional diversity and enzyme activity in glyphosate-resistant wheat-canola rotations under low-disturbance direct seeding and conventional tillage	Lupwayi, N Z; Hanson, K G; Harker, K N; Clayton, G W; Blackshaw, R E; Odonovan, J T; Johnson, E N; Gan, Y; Irvine, R B; Monreal, M A	Soil biology and biochemistry (2007) , Volume 39, Number 7, pp. 1418-1427 ISSN: 0038-0717 Source Note: 2007 July, v. 39, issue 7	Non-relevant by full text	This publication focuses on genetically modified organisms / transgenic crops; no data are directly relevant to glyphosate evaluation. This field study was conducted at six sites on the Canadian prairies and therefore is not dealing with EU / Japan representative uses / conditions (e.g. field locations, soil properties, etc.). Furthermore, the glyphosate formulation used in this study was not identified (just the application rate) and was mixed with other chemicals and thus the observations are not attributable to glyphosate.			
The Growth, Apoptosis and Oxidative Stress in <i>Microcystis viridis</i> Exposed to Glyphosate.	Ye Jing; Huang Chen; Qiu Zhihao; Wu Liang Xu Chao	Bulletin of environmental contamination and toxicology, (2019 Oct) Vol. 103, No. 4, pp. 585-589. Electronic Publication Date: 19 Aug 2019 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Non-relevant by full text	Achieved end-points are not releatable to an EU level ecotoxicology assessment for Annex I renewal.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Soil microbial response to herbicides applied to glyphosate - resistant canola	Lupwayi, N Z; Harker, K N; Clayton, G W; Odonovan, J T; Blackshaw, R E	Agriculture, ecosystems and environment (2009) , Volume 129, Number 1-3, pp. 171-176 ISSN: 0167-8809 Published by: Amsterdam; New York: Elsevier Source Note: 2009 Jan., v. 129, no. 1-3	Non-relevant by full text	This publication is not dealing with EU / Japan representative uses / conditions (e.g. the field survey was conducted on different sites in Canada). In addition, it deals with a Roundup formulation, probably containing the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. Some of the treatments are also caused by a mixture of potentially causal factors / chemicals and thus not only attributable to glyphosate. No comparison to control is possible, because there was no control treatment without herbicide application. The study was conducted to compare a glyphosate-resistant canola system with alternative herbicides.			
Effect of Pesticides on the Soil Microbial Activity.	Yousaf, Saeeda [Reprint Author]; Khan, Sardar; Aslam, Muhammad Tahseen	Pakistan Journal of Zoology, (AUG 2013) Vol. 45, No. 4, pp. 1063-1067. CODEN: PJZOAN. ISSN: 0030-9923.	Non-relevant by full text	Achieved endpoints are not relevant to an EU level risk assessment. Novel test design with no positive control and cannot confirm dose.			
Soil ecotoxicity assessment of glyphosate use under field conditions: microbial activity and community structure of Eubacteria and ammonia-oxidising bacteria.	Zabaloy Maria C; Gomez Marisa A Carne Ignacio; Viassolo Rodrigo; Gomez Elena	Pest management science, (2016 Apr) Vol. 72, No. 4, pp. 684-91. Electronic Publication Date: 29 May 2015 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Non-relevant by full text	Findings are not relateable to an EU level ecotoxicology risk assessment for Annex I renewal purposes.			
The changes of the immunocompetent cells ultrastructure in the kidney, spleen and liver in Amur sleeper Percottus glenii at the influence of pesticide Roundup.	Zabotkina, E. A. [Reprint Author]; Golovanov, V. K.; Golovanova, I. L.	Trudy VNIRO, (2016) Vol. 162, pp. 73-81. http://www.vniro.ru/en/publishingvniro/bulletins/trudy-vniro/archive-of-issues . ISSN: 2307-3497. E-ISSN: 2307-3497.	Non-relevant by full text	Article cannot be related to an EU level ecotoxicology risk assessment, as exposure levels cannot be confirmed and there are no end-points presented that could be used in an ecotoxicology assessment. The paper describes sub-lethal effects / morphological changes in the structure of mitochondria.			
Growth-inhibitory Effects of Herbicides on Soil Bacterial Population in Oil Palm Plantation	Zain, Nur Masirah Mohd; Mohamad, Rosli B. [Reprint Author]; Sijam, Kamaruzaman; Morshed, Md Mahbub; Awang, Yahya	Journal of Pure and Applied Microbiology, (SEP 2013) Vol. 7, No. 3, pp. 1799-1808. ISSN: 0973-7510.	Non-relevant by full text	Paper describes mixture toxicity on soil communities of four pesticides, therefore not relevant to single active substance formulation for EU renewal. onto Annex i			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Herbicides in vineyards reduce grapevine root mycorrhization and alter soil microorganisms and the nutrient composition in grapevine roots, leaves, xylem sap and grape juice.	Zaller Johann G; Cantelmo Clemens; Santos Gabriel Dos; Muther Sandra; Gruber Edith; Pallua Paul; Mandl Karin; Friedrich Barbara; Hofstetter Ingrid; Schmuckenschlager Bernhard; Faber Florian	Environmental science and pollution research international, (2018 Aug) Vol. 25, No. 23, pp. 23215-23226. Electronic Publication Date: 3 Jun 2018 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344. Report No.: PMC-PMC6096560.	Non-relevant by full text	Study conducted using a formulation that is not the representative formulation for the Annex I renewal.			
Glyphosate herbicide affects belowground interactions between earthworms and symbiotic mycorrhizal fungi in a model ecosystem.	Zaller Johann G; Heigl Florian; Grabmaier Andrea; Ruess Liliane	Scientific reports, (2014 Jul 09) Vol. 4, pp. 5634. Electronic Publication Date: 9 Jul 2014 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: NLM-PMC4087917; PMC-PMC4087917.	Non-relevant by full text	Formulation used was roundup which contains POEA, that is not relevant in the EU.			
Selectivity of pesticides registered for soybean crop on <i>Telenomus podisi</i> and <i>Trissolcus basal</i> .	Zantedeschi, Ronaldo [Reprint Author]; Grutzmacher, Anderson Dionei; Pazini, Juliano de Bastos; Bueno, Flavio Amaral; Machado, Larissa Longaray	Pesquisa Agropecuaria Tropical, (JAN-MAR 2018) Vol. 48, No. 1, pp. 52-58. http://www.revistas.ufg.br/index.php/pat . ISSN: 1517-6398.	Non-relevant by full text	Test substance identity and level of exposure cannot be confirmed by the details presented in the paper.			Y
A glyphosate-based herbicide reduces fertility, embryonic upper thermal tolerance and alters embryonic diapause of the threatened annual fish <i>Austrolebias nigrofasciatus</i> .	Zezbal Yuri Dornelles; Lansini Luize Real; Roza Mauricio Costa Patricia Gomes; Bianchini Adalto Robaldo Ricardo Berteaux	Chemosphere, (2018 Apr) Vol. 196, pp. 260-269. Electronic Publication Date: 2 Jan 2018 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	The paper relates to the product Transorb R and not the representative formulation for the Annex I renewal. The presented data are not considered relevant for use in risk assessment as they are single rates and not derived end-points.			Y
Effects of glyphosate at environmentally relevant concentrations on the growth of and microcystin production by <i>Microcystis aeruginosa</i> .	Zhang Quan; Zhou Hang; Li Zhe; Zhu Jianqiang; Zhou Cong; Zhao Meirong	Environmental monitoring and assessment, (2016 Nov) Vol. 188, No. 11, pp. 632. Electronic Publication Date: 22 Oct 2016 Journal code: 8508350. E-ISSN: 1573-2959. L-ISSN: 0167-6369.	Non-relevant by full text	This study presents cellular and molecular findings that are not relatable to the EU level ecotoxicology risk assessment for Annex I renewal.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The impact of insecticides and herbicides on the biodiversity and productivity of aquatic communities .	Thompson, D G; Solomon, K R; Wojtaszek, B F; Edginton, A N; Stephenson, G R	Ecological applications : a publication of the Ecological Society of America (2006) , Volume 16, Number 5, pp. 2022-2027 ISSN: 1051-0761 Source Note: 2006 Oct., v. 16, no. 5	Non-relevant by full text	This publication deals with a Roundup formulation, containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan. This is not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the study design and test system is not fully relevant for regulatory purposes (All tested organisms included in these aquatic mesocosms were brought to the laboratory from natural unidentified sources and distributed into the different aquaria). Year of publication is 2005.			
The influence of roundup on the dynamics of histological changes in organs of carps.	Zhidenko, A. A.; Kovalenko, Ye. M.	Hydrobiological Journal, (2007) Vol. 43, No. 2, pp. 93-99.	Non-relevant by full text	This publication does provide histological changes after exposure to a Roundup formulation at 0.004 mg/L; no numerical/graphical results are provided. The description of the study design is very limited, the test conditions are poorly described and the effects cannot be related to the risk assessment. Therefore this study is not regarded relevant.			
The occurrence of hormesis in plants and algae .	Cedergreen Nina; Streibig Jens C; Kudsk Per; Mathiassen Solvejg K; Duke Stephen O	Dose-response : a publication of International Hormesis Society, (2006 Oct 17) Vol. 5, No. 2, pp. 150-62. Electronic Publication Date: 17 Oct 2006	Non-relevant by full text	In this publication the frequency, magnitude and dose/concentration range of hormesis of one algal and three plant species after exposure to glyphosate and other pesticides was investigated. Therefore available dose-response curves from other publications were taken into account. As no new experimental data was generated and the findings cannot be related to the risk assessment this publication is regarded to be not relevant.			
The toxicity of Roundup Original Max to 13 species of larval amphibians .	Relyea Rick A; Jones Devin K	Environmental toxicology and chemistry, (2009 Sep) Vol. 28, No. 9, pp. 2004-8.	Non-relevant by full text	The Roundup Original Max® formulation used in the study probably contains POEA surfactant (or any similar) which is not permitted in formulated herbicidal products in the EU / Japan. In addition no analytical verification of the test item concentration in the test media was conducted.			Y
The use of glyphosate herbicides in managed forest ecosystems and their effects on non-target organisms with particular reference to ants as bioindicators	Guiseppe, Kerry F L	(2006) , Electronic Series Title: Technical bulletin (Maine Agricultural and Forest Experiment Station) ; 192. ISSN: 1070-1524 Published by: [Orono, ME : The University of Maine, 2006?] Source Note: Pub. Frequency: Annual	Non-relevant by full text	Scientific review of existing literature.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effects of nitrification inhibitor and herbicides on nitrification, nitrite and nitrate consumptions and nitrous oxide emission in an Australian sugarcane soil	Zhang, Manyun; Li Tang; Marijke Heenan; Weijin Wang; Zhihong Xu	Biology and fertility of soils (2018), Volume 54, Number 6, pp. 697-706 ISSN: 0178-2762 Published by: Springer Berlin Heidelberg Source Note: 2018 Aug., v. 54, no. 6	Non-relevant by full text	The paper describes the influence of a nitrification inhibitor on soil functional process when exposed to herbicides. This is a comparative assessment study that is difficult to relate to an Annex I ecotoxicology risk assessment.			
Effects of glyphosate on <i>Microcystis aeruginosa</i> growth and related mechanisms	Zhang, Qiong; Yuan, Xing-chao; Pei, Zhao-hu; Zhao, Jian; Han, Min; Deng, Tao	Anhui Nongye Kexue, (2015) Vol. 43, No. 36, pp. 157-159, 206. CODEN: ANKEEN. ISSN: 0517-6611.	Non-relevant by full text	There are no end-points presented that could be used in an EU level ecotoxicology risk assessment.			
Acute toxicity and risk assessment of paraquat aqueous solution and its 9 alternative products to <i>Bombyx mori</i>	Zhang, Zhongxiao; Ning, Yubo; Li, Zhao; Wang, Kaiyun; Jiang, Lili	Canye Kexue, (2016) Vol. 42, No. 3, pp. 483-487. CODEN: CAKEEM. ISSN: 0257-4799.	Non-relevant by full text	The dipping technique for leaf exposure is not a recognized EU approach for toxicity testing. Not relevant to an EU level Annex I ecotoxicology risk assessment.			
Tissue specific DNA damage in the European eel (<i>Anguilla anguilla</i>) following a short-term exposure to a glyphosate-based herbicide	Guilherme, S; Gaivao, I; Santos, Ma; Pacheco, M	Toxicology Letters [Toxicol. Lett.], Vol. 189, S212 p. 13 Sep 2009. ISSN: 0378-4274 DOI: 10.1016/j.toxlet.2009.06.550 Published by: Elsevier Science, Elsevier House, Brookvale Plaza East Park Shannon, Co. Clare Ireland, [mailto:ninfo-f@elsevier.nl], [URL	Non-relevant by full text	This abstract refers to the 46th Congress of the European Societies of Toxicology. Tissue specific DNA damage in the European eel following a short-term exposure to a glyphosate based herbicide is the topic under investigation. As no detailed information is provided and the findings are only based on molecular level, they cannot be related to the risk assessment.			
Non-target effects of herbicides on soil nematode assemblages	Zhao, Jie; Neher, Deborah A.; Fu, Shenglei; Li, Zhi-an; Wang, Kelin	Pest Management Science, (2013) Vol. 69, No. 6, pp. 679-684. CODEN: PMSCFC. ISSN: 1526-498X.	Non-relevant by full text	Paper discusses a soil nematode meta-analysis with no supported data presented. The resulting analysis cannot be related to an EU level Annex I risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Toxicity of a glufosinate- and several glyphosate-based herbicides to juvenile amphibians from the Southern High Plains, USA.	Dinehart, Simon K.; Smith, Loren M.; Mcmurry, Scott T.; Anderson, Todd A.; Smith, Philip N.; Haukos, David A.	Sci. Total Environ., Volume 407, Issue 3, Page 1065-1071, Publication Year 2009	Non-relevant by full text	This publication is dealing with Roundup formulations containing the surfactant POEA, which is not permitted in formulated herbicidal products in the EU / Japan or in a mixture together with pelargonic acid. These are not the representative formulation for the AIR5 dossier and thus not relevant to the EU / Japan glyphosate renewal. In addition, the individuals were taken from natural sources and the specific exposure history of the populations from which animals used in this study were drawn is unknown. These amphibian populations likely experienced previous pesticide exposure because they were inhabiting wetlands surrounded by agriculture.			Y
Toxicity of formulated glyphosate (glyphos) and cosmo-flux to larval Colombian frogs 1. Laboratory acute toxicity .	Bernal M H; Solomon K R; Carrasquilla G	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 961-5.	Non-relevant by full text	In this article the observations were caused by a mixture of compounds (a mixture of formulated glyphosate -Glyphos- and the adjuvant Cosmo-Flux) and thus not attributable to glyphosate alone (e.g. mixture toxicity). In addition, the tested glyphosate formulation is not the representative formulation for the AIR5 dossier and thus not relevant to the EU /Japan glyphosate renewal. It probably contains the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. All tested individuals were taken from natural sources with an unknown history of previous chemical applications.			Y
STRUCTURAL AND FUNCTIONAL CHARACTERISTICS OF PROKARYOTIC COMPLEX OF SOD-PODZOLIC SOIL INFLUENCED BY HERBICIDE GLYPHOSATE	Zhelezova, A. D.; Manucharova, N. A.; Gorlenko, M. V	Vestnik Moskovskogo Universiteta Seriya 17 Pochvovedenie, (APR-JUN 2018) No. 2, pp. 48-54. CODEN: VMUPDN. ISSN: 0137-0944.	Non-relevant by full text	This is a medium to long term soil bacteria monitoring study. There are no quantifiable end-points presented nor exposure levels defined that can be related to an EU level ecotoxicology risk assessment for renewal purposes. Despite glyphosate being mentioned in the title / abstract, there is no information about glyphosate (rates used / source / purity etc.) in the paper.			
Toxicity of formulated glyphosate (glyphos) and cosmo-flux to larval and juvenile colombian frogs 2. Field and laboratory microcosm acute toxicity .	Bernal M H; Solomon K R; Carrasquilla G	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 966-73.	Non-relevant by full text	In this article the observations were caused by a mixture of compounds (a mixture of formulated glyphosate -Glyphos- and the adjuvant Cosmo-Flux) and thus not attributable to glyphosate alone (e.g. mixture toxicity). In addition, the tested glyphosate formulation is not the representative formulation for the AIR5 dossier and thus not relevant to the EU /Japan glyphosate renewal. It probably contains the surfactant POEA (or any similar), which is not permitted in formulated herbicidal products in the EU / Japan. All tested individuals were taken from natural sources with an unknown history of previous chemical applications. Furthermore, this field study does not deal with EU / Japan representative uses / conditions (e.g. field locations, water properties specific climatic conditions, etc.).			Y
Toxicity of glyphosate as Glypro and LI700 to red-eared slider (trachemys scripta elegans) embryos and early hatchlings.	Sparling Donald W; Matson Cole; Bickham John; Doelling-Brown Paige	Environmental toxicology and chemistry, (2006 Oct) Vol. 25, No. 10, pp. 2768-74.	Non-relevant by full text	This study presents observations caused by mixture of compounds (the glyphosate formulation Glypro and a 3% solution of the surfactant LI700) and thus not attributable to only glyphosate.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Responses of <i>Hydrilla verticillata</i> (L.f.) Royle and <i>Vallisneria spiralis</i> (L.) L. to glyphosate exposure	Zhong, Guidi; Zhonghua Wu; Jun Yin; Lulu Chai	Chemosphere, (2018 Feb) Vol. 193, pp. 385-393. Electronic Publication Date: 2 Nov 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	The paper describes enzymatic levels in aquatic plants that cannot be related to an EU level risk assessment for EU renewal.			Y
Inhibition effect of glyphosate on the acute and subacute toxicity of cadmium to earthworm <i>Eisenia fetida</i> .	Zhou Chui-Fan; Wang Yu-Jun; Sun Rui-Juan; Liu Cun; Fan Guang-Ping; Qin Wen-Xiu; Li Cheng-Cheng; Zhou Dong-Mei	Environmental toxicology and chemistry, (2014 Oct) Vol. 33, No. 10, pp. 2351-7. Electronic Publication Date: 28 Aug 2014 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	This paper looked at the impact of GBH in combination with cadmium in soil on earthworm toxicity. Mixture assessment not considered relevant for the Annex I renewal of a single a.i. containing representative formulation for Annex I renewal.			
Does glyphosate impact on Cu uptake by, and toxicity to, the earthworm <i>Eisenia fetida</i> ?	Zhou Chui-Fan; Wang Yu-Jun; Yu Yuan-Chun; Sun Rui-Juan; Zhu Xiang-Dong; Zhang Hai-Lin; Zhou Dong-Mei	Ecotoxicology (London, England), (2012 Nov) Vol. 21, No. 8, pp. 2297-305. Electronic Publication Date: 14 Sep 2012 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Non-relevant by full text	This paper looked at the impact of GBH in combination with copper in soil on earthworm toxicity. This study was a mixture assessment and thus not considered relevant for the Annex I renewal of a single a.i. containing the representative formulation for Annex I renewal.			Y
Herbicides interfere with antigrazer defenses in <i>Scenedesmus obliquus</i> .	Zhu Xuexia; Sun Yunfei; Zhang Xingxing; Heng Hailu; Nan Haihong; Zhang Lu; Huang Yuan; Yang Zhou	Chemosphere, (2016 Nov) Vol. 162, pp. 243-51. Electronic Publication Date: 6 Aug 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	This paper discusses sub-lethal impacts of glyphosate on colonising activity of <i>Scenedesmus</i> . The end-points are not releatable to the EU level ecotoxicology risk assessment for Annex I renewal.			Y
Feeding toxicity and impact of imidacloprid formulation and mixtures with six representative pesticides at residue concentrations on honey bee physiology (<i>Apis mellifera</i>).	Zhu Yu Cheng; Yao Jianxiu; Luttrell Randall Adamczyk John	PLoS one, (2017) Vol. 12, No. 6, pp. e0178421. Electronic Publication Date: 7 Jun 2017 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC5462352.	Non-relevant by full text	This study summarises that there were no effects on bees from glyphosate exposure alone. When mixed with other pesticides, effects observed, but as this is based on mixtures, it is not relevant to EU level ecotoxicology risk assessment for single active containing formulation for Annex I renewal in the EU.			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Why amphibians are more sensitive than mammals to xenobiotics.	Quaranta Angelo; Bellantuono Vito; Cassano Giuseppe; Lippe Claudio	PloS one, (2009 Nov 04) Vol. 4, No. 11, pp. e7699. Electronic Publication Date: 4 Nov 2009	Non-relevant by full text	Findings of this publication, related to the permeability of frogs and pigs skin to different chemicals including glyphosate are not related to ecotoxicology. In this article glyphosate was not the focus of the study (it deals with general pesticide exposure) and its study design and test system are not relevant for ecotoxicological regulatory purposes			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Effective glyphosate degradation through the combination of ozone/hydrogen peroxide oxidation and coagulation.	Chen Lei; Zhou ShengBao; Xu YanHua; Sun YongJun; Zheng HuaiLi; Chen, L.; Zhou, S. B.; Xu, Y. H.; Sun, Y. J.; Zheng, H. L.	Desalination and Water Treatment (2020), Volume 204, pp. 377-387, 46 refs. ISSN: 1944-3994 DOI: 10.5004/dwt.2020.26261 Published by: Balaban Publishers - Desalination Publications, Hopkinton URL (Availability): https://www.deswater.com/vol.php?vol=204&oth=204 0 November%20 2020	Non-relevant by full text	The article focuses on the effect of ozone and hydrogen peroxide treatment on glyphosate removal in industrial wastewater treatment of pesticide-producing industry. For the experiments, artificial colored "glyphosate-simulated wastewater" was used. No information on glyphosate analysis or concentration is reported. The article is therefore considered not relevant to the data requirement.			
Do rainfall characteristics affect the export of copper, zinc and synthetic pesticides in surface runoff from headwater catchments?	Imfeld, Gwenael (Reprint); Meite, Fatima; Wiegert, Charline; Guyot, Benoit; Masbou, Jeremy; Payraudeau, Sylvain	SCIENCE OF THE TOTAL ENVIRONMENT, (1 2020 NOV 2020) Vol. 741. ISSN: 0048-9697.	Non-relevant by full text	Glyphosate was not the substance of concern, glyphosate was not included in the 12 pesticides analysed.			
Removal of hazardous substances in municipal wastewater treatment plants	Korgmaa, Vallo; Laht, Mailis; Rebane, Riin; Lember, Erki; Pachel, Karin; Kriipsalu, Mait; Tenno, Taavo; Iital, Arvo	Water Science & Technology, (2020) Vol. 81, No. 9, pp. 1-12. CODEN: WSTED4. ISSN: 1996-9732.	Non-relevant by full text	The article focuses on the removal efficiency of municipal wastewater treatment plants for different pollutants, amongst them glyphosate & AMPA, and the influence of the level of complexity as well as operators' competency. No results of analysis of glyphosate or AMPA are reported. Therefore, the article is considered not relevant to the data requirements.			
Monoammonium Phosphate Effects on Glyphosate in Soils: Mobilization, Phytotoxicity, and Alteration of the Microbial Community.	Kulikova, N. A. [Reprint Author]; Zhelezova, A. D.; Voropanov, M. G.; Filippova, O. I.; Plyushchenko, I. V.; Rodin, I. A.	Eurasian Soil Science, (JUN 2020) Vol. 53, No. 6, pp. 787-797. http://www.springerlink.com/content/1064-2293/ . ISSN: 1064-2293. E-ISSN: 1556-195X.	Non-relevant by full text	The article focuses on the amount of water-extractable glyphosate and AMPA from soils treated with glyphosate with or without addition of monoammonium phosphate. Further, the number of copies of 16S rRNA genes of bacteria was analysed to on the abundance of functional genes of bacteria responsible for glyphosate degradation. As neither degradation nor adsorption is investigated, the article is considered not relevant to the data requirements.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Risk of groundwater contamination widely underestimated because of fast flow into aquifers.	Hartmann Andreas Hartmann Andreas; Wagener Thorsten Jasechko Scott Gleeson Tom Wada Yoshihide Wada Yoshihide Andreo Bartolome; Barbera Juan Antonio; Martin Jose Francisco; Mudarra Matias; Sanchez Damian Brielmann Heike Bouchaou Lhoussaine Bouchaou Lhoussaine Charlier Jean-Baptiste; Ladouche Bernard Charlier Jean-Baptiste; Ladouche Bernard Darling W George Filippini Maria Garvelmann Jakob; Kunstmann Harald Garvelmann Jakob Goldscheider Nico Kralik Martin Kunstmann Harald Lange Jens Lucianetti Giorgia Stumpp Christine Zagana Eleni Wagener Thorsten Wagener Thorsten	Proceedings of the National Academy of Sciences of the United States of America, (2021 May 18) Vol. 118, No. 20. Journal code: 7505876. E-ISSN: 1091-6490. L-ISSN: 0027-8424.	Non-relevant by full text	A continental-scale model to quantify the risk of groundwater contamination with glyphosate and other compounds in the carbonate rock regions of Europe, North Africa and the Middle East was developed. The consistency of the model for glyphosate was evaluated with US data. The article does not report any measured data. The model results were qualitatively compared with referenced literature data for US, Switzerland and Ireland.			
Some comments on: Phosphate and glyphosate sorption in soils following long-term phosphate applications by Munira et al. (2018)	Barrow, N.J.	Geoderma (15 Nov 2021) Volume 402, art: 115334, 9 refs. CODEN: GEDMAB ISSN: 0016-7061 DOI: 10.1016/j.geoderma.2021.115334 Published by: Elsevier B.V.,	Non-relevant by full text	Ther article is commenting on another article (Phosphate and glyphosate sorption in soils following long-term phosphate applications by Munira et al. (2018)). The comment is related to the influence of phosphate on the adsorption of glyphosate. Another equation for calculating the Kf value in the presence of phosphate is proposed. There is no impact on the results for non-phosphate-amended soil. Furthermore the comment does not give any results but only further recommendations for data evaluation and interpretation.			
The fate of a hazardous herbicide: a DFT-based ab initio study on glyphosate degradation.	Sadatsharifi Malek Ingersoll Daniel W Purgel Mihaly	Environmental science. Processes & impacts, (2021 Jul 21) Vol. 23, No. 7, pp. 1018-1028. Journal code: 101601576. E-ISSN: 2050-7895. L-ISSN: 2050-7887.	Non-relevant by full text	Calculations were performed using density functional theory and post-Hartree-Fock correlated ab initio methods to find the possible mechanisms for the degradation process by small (hydroxyl, peroxy, and superoxide) radicals. Rate constants (s ⁻¹) were calculated from the ab initio results for different elementary steps (transition steps for the reaction of glyphosate anions and radicals). No endpoints for EU risk assessment are generated. Quantum chemical calculations were applied to determined structures and energies of molecular forms (isomers, intermediates, transition states) of glyphosate.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Estimating pesticides in public drinking water at the household level in Denmark	Vouthkova, Denitza D. (Reprint); Schullehner, Jorg; Hansen, Birgitte Schullehner, Jorg Skaarup, Carina; Wodschow, Kirstine; Ersboll, Annette Kjaer	GEUS BULLETIN, (2021 2021) Vol. 47. ISSN: 2597-2154.	Non-relevant by full text	Data on pesticide residues in Danish drinking water was taken from the national database Jupiter (https://eng.geus.dk/products-services-facilities/data-andmaps/national-well-database-jupiter). The highest amount detected was 3.2 µg/L for glyphosate and 1.2 µg/L for AMPA (see supplemental material). No information on location and timing of the detection are reported. The article contains secondary information and does not generate new data. Jupiter database was covered by applicant's evaluation on public monitoring data.			
Hydrologic Conditions and Quality of Rainfall and Storm Runoff for Two Agricultural Areas of the Oso Creek Watershed, Nueces County, Texas, 2005-07	Ockerman, Darwin J	Scientific Investigations Report. U.S. Geological Survey. no. 2008-5103, 67 pp. 2008. Published by: U.S. Geological Survey URL (Document): http://pubs.usgs.gov/sir/2008/5103/	Non-relevant by full text	Publication not dealing with Japan/EU representative conditions (i.e. monitoring location). The purpose of this report was to characterize hydrologic conditions and the water quality of rainfall and storm runoff for two primarily agricultural subwatersheds in the Oso Creek watershed in Nueces County (Texas, U.S.).			
Biodegradation of Glyphosate by Fungi Species	Adelowo, F E; Olu-Arotiowa, O A; Amuda, O S	Advances in Bioscience and Bioengineering. Vol. 2, no. 1, 104 p. 2014., 27 refs. E-ISSN: 2201-8336 Published by: InfinityPress, Box 474 Edgecliff NSW 2027 Australia	Non-relevant by full text	Degradation of glyphosate by fungal isolates from Nigerian soil not relevant to EU risk assessment.			
Influence of parameters on the heterogeneous photocatalytic degradation of pesticides and phenolic contaminants in wastewater: A short review.	Ahmed, Saber (correspondence); Rasul, M.G. Brown, R. Hashib, M.A.	Journal of Environmental Management, (March 2011) Vol. 92, No. 3, pp. 311-330. Refs: 206 ISSN: 0301-4797 CODEN: JEVMAW	Non-relevant by full text	This paper is a literature review with no experimental data provided. Investigation of specific methods of wastewater treatment are also not relevant to the data requirements			
Pesticide and trace metals in surface waters and sediments of rivers entering the Corner Inlet Marine National Park, Victoria, Australia.	Allinson Graeme Allinson Graeme; Allinson Mayumi; Wightwick Adam Allinson Mayumi; Rose Gavin Bui AnhDuyen; Zhang Pei; Croatto George; Rose Gavin Wightwick Adam Walters Robert	Environmental science and pollution research international, (2016 Mar) Vol. 23, No. 6, pp. 5881-91. Electronic Publication Date: 23 Nov 2015 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	No glyphosate analysis included in paper.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Voltammetric quantification of Paraquat and glyphosate in surface waters. Determinacion voltametrica de paraquat y glifosato en aguas superficiales.	Alza-Camacho, W. R.; Garcia-Colmenares, J. M.; Chaparro-Acuna, S. P.	Revista Corpoica - Ciencia y Tecnologia Agropecuarias (2016), Volume 17, Number 3, pp. 331-345, 49 refs. ISSN: 0122-8706 DOI: 10.21930/rcta.vol17_num3_art:510 Published by: Corpoica (Corporacion Colombiana de Investigacion Agropecuaria), Bogota URL (Avail	Non-relevant by full text	Primarily a methods paper. Includes analysis of 10 water samples from Colombia but only minimal details on collection of samples provided.			
Reply to: Comments on the paper: Re-evaluation of groundwater monitoring data for glyphosate and bentazone by taking detection limits into account	Anon.	Science of the Total Environment (2016), 557-558, 916 CODEN: STENDL; ISSN: 0048-9697	Non-relevant by full text	No new data presented, just discussion of statistical methods for re-evaluation.			
Environmental fate of glyphosate and aminomethylphosphonic acid in surface waters and soil of agricultural basins.	Aparicio Virginia C De Geronimo Eduardo; Marino Damian; Primost Jezabel; Carriquiriborde Pedro; Costa Jose L	Chemosphere, (2013 Nov) Vol. 93, No. 9, pp. 1866-73. Electronic Publication Date: 9 Jul 2013 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Analysis of soil and surface water samples related to cultivation of transgenic crops in Argentina are not representative for European agricultural practice.			
Desorption rate of glyphosate from goethite as affected by different entering ligands: hints on the desorption mechanism.	Arroyave, Jeison M.; Waiman, Carolina C.; Zanini, Graciela P.; Tan, Wenfeng; Avena, Marcelo J. [Reprint Author]	Environmental Chemistry, (2017) Vol. 14, No. 5, pp. 288-294. http://www.publish.csiro.au/?nid=188 . ISSN: 1448-2517. E-ISSN: 1449-8979.	Non-relevant by full text	Desorption of glyphosate from goethite is studied relative to other competing ligands. Provides useful information on glyphosate desorption factors but not relevant to risk assessment.			
Assessment of river sediment toxicity: Combining empirical zebrafish embryotoxicity testing with in silico toxicity characterization.	Babic Sanja; Barisic Josip; Coz-Rakovac Rozelindra; Stipanicev Drazenka; Repec Sinisa Lovric Mario Malev Olga Martinovic-Weigelt Dalma Klobucar Goran	The Science of the total environment, (2018 Dec 01) Vol. 643, pp. 435-450. Electronic Publication Date: 23 Jun 2018 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Toxicity of sediments containing mixtures of chemicals are discussed.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Sorption-desorption behavior of pesticides and their degradation products in volcanic and nonvolcanic soils: interpretation of interactions through two-way principal component analysis	Baez Maria E Espinoza Jeannette; Silva Ricardo; Fuentes Edwar	Environmental science and pollution research international, (2015 Jun) Vol. 22, No. 11, pp. 8576-85. Electronic Publication Date: 7 Jan 2015 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Adsorption/ desorption studies done on a mixture of glyphosate and AMPA. Not relevant for EU risk assessment.			
Determination of glyphosate and aminomethylphosphonic acid in aqueous soil matrices: a critical analysis of the 9-fluorenylmethyl chloroformate derivatization reaction and application to adsorption studies.	Baez Maria E Fuentes Edwar; Espinoza Maria Jose; Espinoza Jeannette	Journal of separation science, (2014 Nov) Vol. 37, No. 21, pp. 3125-32. Electronic Publication Date: 22 Sep 2014 Journal code: 101088554. E-ISSN: 1615-9314. L-ISSN: 1615-9306.	Non-relevant by full text	Adsorption/ desorption studies done on a mixture of glyphosate and AMPA. Not relevant for EU risk assessment.			
Glyphosate and its degradation product AMPA occur frequently and widely in U.S. soils, surface water, groundwater, and precipitation. Special Issue: Contaminants of emerging concern II.	Battaglin, W. A.; Meyer, M. T.; Kuivila, K. M.; Dietze, J. E.	Journal of the American Water Resources Association (2014), Volume 50, Number 2, pp. 275-290 ISSN: 1093-474X DOI: 10.1111/jawr.12159 Published by: American Water Resources Association (AWRA), Middleburg URL (Availability): http://onlinelibrary.wiley.com/d	Non-relevant by full text	Analysis of soil, groundwater, surface water and sediment samples from USA are not representative for European agricultural practice			
Spatial glyphosate and AMPA redistribution on the soil surface driven by sediment transport processes - A flume experiment	Bento, Celia P M; Coen J Ritsema; Hans G J Mol; Jantiene E M Baartman; Meindert C Commelin; Piet Peters; Violette Geissen; Xiaomei Yang	Environmental pollution (2018), Volume 234, pp. 1011-1020 ISSN: 0269-7491 Published by: Elsevier Ltd Source Note: 2018 Mar., v. 234	Non-relevant by full text	Artificial run-off situation not relevant for risk assessment.			
Modeling the mobility of glyphosate from two contrasting agricultural soils in laboratory column experiments	Berzins, Andrejs; Jansons, Martins; Kalneniece, Kristine; Shvirksts, Karlis; Afanasjeva, Kristine; Kasparinskis, Raimonds; Grube, Mara; Bartkevics, Vadims; Muter, Olga	Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes (2019) Ahead of Print CODEN: JPFCD2; ISSN: 0360-1234	Non-relevant by full text	Study of glyphosate degradation in Latvian sandy and loamy sand soils +/- augmentation with endophytic bacteria and fungi isolated from oilseed rape and barley followed by column leaching of same soils. Method not relevant for EU risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Herbicide mitigation in microcosms simulating stormwater basins subject to polluted water inputs.	Bois P Huguenot D; Jezequel K; Lollier M; Cornu J Y; Lebeau T	Water research, (2013 Mar 01) Vol. 47, No. 3, pp. 1123-35. Electronic Publication Date: 3 Dec 2012 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Non-relevant by full text	Glyphosate concentrations in the microcosm system were 1000 fold higher than typical concentrations. Glyphosate degradation results not relevant for risk assessment.			
Herbicide degradation and copper complexation by bacterial mixed cultures from a vineyard stormwater basin.	Bois, Paul; Huguenot, David; Norini, Marie-Paule; Farhan Ul Haque, Muhammad; Vuilleumier, Stephane; Lebeau, Thierry [Reprint Author]	Journal of Soils and Sediments, (JUL 2011) Vol. 11, No. 5, pp. 860-873. http://www.springerlink.com/content/112850/ . ISSN: 1439-0108. E-ISSN: 1614-7480.	Non-relevant by full text	Cultivation and analysis of bacterial communities as well as analysis of glyphosate in the respective culture supernatants are not relevant to the data requirements.			
The Fate of Glyphosate and AMPA in a Freshwater Endorheic Basin: An Ecotoxicological Risk Assessment.	Bonansea Rocio Ines; Filipi Johanna; Ame Maria Valeria Wunderlin Daniel Alberto Marino Damian Jose Gabriel	Toxics, (2017 Dec 21) Vol. 6, No. 1. Electronic Publication Date: 21 Dec 2017 Journal code: 101639637. E-ISSN: 2305-6304. L-ISSN: 2305-6304. Report No.: PMC-PMC5874776.	Non-relevant by full text	Paper reports concentrations of glyphosate & AMPA in water, sediment and suspended particulate matter in a river in Argentina. No information on product use provided. Not relevant to EU risk assessment.			
Mineralization and degradation of glyphosate and atrazine applied in combination in a Brazilian Oxisol.	Bonfleur Eloana J Lavoretti Arquimedes; Tornisielo Valdemar L	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2011) Vol. 46, No. 1, pp. 69-75. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	laboratory soil degradation experiments with Brazilian soils are not representative for European conditions			
Improvements in the analytical methodology for the residue determination of the herbicide glyphosate in soils by liquid chromatography coupled to mass spectrometry.	Botero-Coy A M Ibanez M; Sancho J V; Hernandez F	Journal of chromatography. A, (2013 May 31) Vol. 1292, pp. 132-41. Electronic Publication Date: 13 Dec 2012 Journal code: 9318488. E-ISSN: 1873-3778. L-ISSN: 0021-9673.	Non-relevant by full text	Primarily a methods paper. Includes analysis of 26 soil samples from Colombia and Argentina but no details on source or collection of samples provided.	Y		

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Analysis of suspended solids and Glyphosate and efficacy of the cross-compliance standard 5.2 'buffer strips' in the protection of superficial water from suspended solids in runoff conveyed through a vineyard. Special Issue: Cross compliance. Results of t	Boz, B.; Pipitone, G.; Gumiero, B.; Bazzoffi, P.; Sansone, L.	Italian Journal of Agronomy (2015), Volume 10, Number s1, 701 p., 18 refs. ISSN: 2039-6805 Published by: PAGEPress Publications, Pavia URL (Availability): http://www.agronomy.it/index.php/agro/article/view/701/741	Non-relevant by full text	The effectiveness of vegetated buffer to prevent glyphosate run-off events was investigated but the concentration of glyphosate from the vineyard runoff were all below the detection limit therefore it was not possible to evaluate the efficiency of the buffer zone in removing glyphosate.			
Reconnaissance of Mixed Organic and Inorganic Chemicals in Private and Public Supply Tapwaters at Selected Residential and Workplace Sites in the United States.	Bradley, Paul M. (correspondence); Kolpin, Dana W.; Romanok, Kristin M.; Smalling, Kelly L.; Focazio, Michael J.; Carpenter, Kurt D.; Corsi, Steven R.; Decicco, Laura A.; Dietze, Julie E.; Furlong, Edward T.; Givens, Carrie E.; Gray, James L.; Griffin, Da	Environmental Science and Technology, (4 Dec 2018) Vol. 52, No. 23, pp. 13972-13985. Refs: 186 ISSN: 0013-936X; E-ISSN: 1520-5851 CODEN: ESTHAG	Non-relevant by full text	Paper describes analysis of glyphosate and AMPA in tapwater from multiple sampling sites in the U.S. Glyphosate and AMPA were not reported to have been found in any samples. Not relevant to EU risk assessment.			
Electrochemical method to study the environmental behavior of Glyphosate on volcanic soils: Proposal of adsorption-desorption and transport mechanisms.	Caceres-Jensen Lizethly Rodriguez-Becerra Jorge; Valdebenito Jennifer; Dominguez-Vera Valentina Sierra-Rosales Paulina Escudey Mauricio Neira-Albornoz Angelo Villagra Cristian A	Journal of hazardous materials, (2019 Jun 20) Vol. 379, pp. 120746. Electronic Publication Date: 20 Jun 2019 Journal code: 9422688. E-ISSN: 1873-3336. L-ISSN: 0304-3894.	Non-relevant by full text	Adsorption /Desorption studies did not follow OECD guideline. Solutions did not contain CaCl2.			
Determination of Herbicides and Its Metabolite in Soil and Water Samples by Capillary Electrophoresis-laser Induced Fluorescence Detection Using Microwave-assisted Derivatization	CAO, Liwei; DENG, Tao; LIANG, Siliu; TAN, Xiaofang; MENG, Jianxin	Analytical Sciences [Analyt. Sci.]. Vol. 30, no. 7, 759 p. 2014. ISSN: 0910-6340 E-ISSN: 1348-2246 Published by: Japan Society for Analytical Chemistry, Agune gijutsu Senta Tokyo 107-0062 Japan	Non-relevant by full text	Analytical method paper, testing fortified environmental samples only to demonstrate method.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Limiting the emissions of micro-pollutants- what efficiency can we expect from wastewater treatment plants?	Choubert, J. M.; Ruel, S. Martin; Esperanza, M.; Budzinski, H.; Miege, C.; Lagarrigue, C.; Coquery, M.	Water Science and Technology, (2011) Vol. 63, No. 1, pp. 57-65. CODEN: WSTED4. ISSN: 0273-1223.	Non-relevant by full text	No specific analysis results for glyphosate or AMPA reported. Investigation of the removal efficiencies of different treatment processes of wastewater treatment plants are not relevant to the data requirements.			
Surface runoff and subsurface tile drain losses of neonicotinoids and companion herbicides at edge-of-field.	Chretien Francois; Theriault Georges; Gagnon Patrick; Giroux Isabelle; Corriveau Julie	Environmental pollution (Barking, Essex : 1987), (2017 May) Vol. 224, pp. 255-264. Electronic Publication Date: 13 Feb 2017 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Concentration measurements in run-off and drainage water from fields cultivated with corn and soybean in Canada are not representative for European agricultural practice.			
The effects of glyphosate on the growth of birdsfoot trefoil (Lotus corniculatus) and its interaction with different phosphorus contents in soil.	Clua, A.; Conti, M.; Beltrano, J.	Journal of Agricultural Science (Toronto) (2012), Volume 4, Number 7, pp. 208-218 ISSN: 1916-9752 Published by: Canadian Center of Science and Education, Toronto URL (Availability): http://ccsenet.org/journal/index.php/jas/article/vi ew/17896/11968	Non-relevant by full text	No analysis of glyphosate or its metabolites. Outdoor study conducted in Argentina, hence conditions are not representative for Europe			
FTIR, CHNS and XRD analyses define mechanism of glyphosate herbicide removal by electrocoagulation.	Danial Rabiituladawiyah; Sobri Shafreeza; Abdullah Luqman Chuah; Mobarekeh Mohsen Nourouzi	Chemosphere, (2019 Jun 03) Vol. 233, pp. 559-569. Electronic Publication Date: 3 Jun 2019 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Theoretical beaker scale test for removing glyphosate from water. Natural water was not used. Not relevant for EU risk assessment.			
Fluorescence spectroscopy to study dissolved organic matter interactions with agrochemicals applied in Swiss vineyards.	Daouk Silwan; Frege Carla; Blanc Nicolas; Mounier Stephane; Redon Roland; Merdy Patricia; Lucas Yves; Pfeifer Hans-Rudolf	Environmental science and pollution research international, (2015 Jun) Vol. 22, No. 12, pp. 9284-92. Electronic Publication Date: 17 Jan 2015 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	No new data on glyphosate are presented. The article focuses on analysis of dissolved organic matter in soil water samples and correlates them with glyphosate concentrations determined in another study (Daouk, 2013).			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Dissipation of glyphosate and aminomethylphosphonic acid in water and sediment of two Canadian prairie wetlands.	Degenhardt Dani Humphries David; Cessna Allan J; Messing Paul; Badiou Pascal H; Raina Renata; Farenhorst Annemieke; Pennock Dan J	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2012) Vol. 47, No. 7, pp. 631-9. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	Field trials in Canadian prairie wetlands are not representative for European agricultural practice.			
Determination of glyphosate and aminomethylphosphonic acid for assessing the quality tap water using SPE and HPLC.	Delmonico, Eduardo Luiz; Bertozzi, Janksyn; de Souza, Nilson Evelazio; Oliveira, Claudio Celestino [Reprint Author]	Acta Scientiarum Technology, (2014) Vol. 36, No. 3, pp. 513-519. http://periodicos.uem.br/ojs/index.php/ActaSciTechnol . ISSN: 1806-2563. E-ISSN: 1807-8664.	Non-relevant by full text	Development of glyphosate analytical method and demonstration of the method through analysis of public water supply samples from Brazil. Not relevant to EU risk assessment.			
Development of electroanalytical methodology for determination of pesticide glyphosate in environmental samples	dos Santos, S. C.; Galli, A.; Felsner, M. L.; Justi, K. C.	Revista Virtual de Quimica, (2014) Vol. 6, No. 4, pp. 866-883. CODEN: RVQEAK. ISSN: 1984-6835.	Non-relevant by full text	Mainly analytical method. Only one natural sample collected and analyzed to demonstrate method.			
The different behaviors of glyphosate and AMPA in compost-amended soil	Erban, Tomas; Stehlik, Martin; Sopko, Bruno; Markovic, Martin; Seifrtova, Marcela; Halesova, Tatana; Kovaricek, Pavel	Chemosphere (2018), 207, 78-83 CODEN: CMSHAF; ISSN: 0045-6535	Non-relevant by full text	Effect of compost amendment on dissipation of glyphosate and AMPA in Czech soil after multiple glyphosate applications. Not relevant to EU risk assessment.			
Bioremediation of glyphosate-contaminated soils.	Ermakova Inna T Kiseleva Nina I; Shushkova Tatyana; Zharikov Mikhail; Zharikov Gennady A; Leontievsky Alexey A	Applied microbiology and biotechnology, (2010 Sep) Vol. 88, No. 2, pp. 585-94. Electronic Publication Date: 31 Jul 2010 Journal code: 8406612. E-ISSN: 1432-0614. L-ISSN: 0175-7598.	Non-relevant by full text	biodegradation by selected bacterial strains in open microcosms and field plots in Russia are not relevant to the data requirement and not representative for European conditions			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Bulk deposition of pesticides in a Canadian city: Part 1. Glyphosate and other agricultural pesticides.	Farenhorst, A.; Andronak, L. A.; McQueen, R. D. A.	Water, Air, and Soil Pollution (2015), Volume 226, Number 3, 47 p., 49 refs. ISSN: 0049-6979 DOI: 10.1007/s11270-015-2343-4 Published by: Springer, Dordrecht URL (Availability): http://rd.springer.com/journal/11270	Non-relevant by full text	Analysis of urban dust deposition samples from agricultural areas in Winnipeg, Canada are not representative for European agricultural practice			
Parameters for glyphosate in OPLS-AA force field	Faria, Roberto R.; Neto, Lourival R. de Sousa; Guerra, Renan F.; Junior, Moacir F. Ferreira; Oliveira, Guedmiller S.; Franca, Eduardo F.	Molecular Simulation (2019), 45(1), 80-85 CODEN: MOSIEA; ISSN: 0892-7022	Non-relevant by full text	Mechanism of action study not relevant to EU risk assessment. Use of molecular dynamics (MD) simulations to provide an atomistic detail in the description of such a system. Herein, partial atomic charges and dihedral angles were obtained quantum mechanism for glyphosate molecule. Parameters for MD simulation were implemented in the OPLS-AA force field to better understand the herbicide mechanism action. Results showed that atomic charges were consistent with the database of the force field. Additionally, potential energy curves for the dihedrals were consistent and could be used to run MD simulations. Therefore, the parameterisation reported for this molecule can be useful to explain studies involving its interaction with many enzymes and proteins such as 5-enolpyruvylshikimate 3-phosphate synthase enzyme (EPSP). Furthermore, considering these new data in OPLS-AA, numerous simulations can be proposed to unveil the effects of the glyphosate as an environment contaminant.			
Legacy and emerging contaminants in meltwater of three Alpine glaciers	Ferrario, Claudia; Finizio, Antonio; Villa, Sara	Science of the Total Environment, (2017) Vol. 574, pp. 350-357. CODEN: STENDL. ISSN: 0048-9697.	Non-relevant by full text	The paper is about contaminants in meltwater of Alpine glaciers, no glyphosate or AMPA were measured.			
Occurrence and removal of priority pollutants by lamella clarification and biofiltration	Gasperi, Johnny; Rocher, Vincent; Gilbert, Solene; Azimi, Sam; Chebbo, Ghassan	Water Research, (2010) Vol. 44, No. 10, pp. 3065-3076. CODEN: WATRAG. ISSN: 0043-1354.	Non-relevant by full text	experiments on wastewater treatment are not relevant to the data requirements			
Glyphosate and nutrient retention in preferential flow pathways	Giaccio, Gustavo C. M. [Reprint Author]; Laterra, Pedro; Aparicio, Virginia C.; Costa, Jose L.; Puricelli, Marino M.	Ecologia Austral, (DEC 2019) Vol. 29, No. 3, pp. 329-338. http://www.scielo.org.ar/scielo.php?script=sci_serial&pid_1667-782X/ing_en/nrm_iso . ISSN: 1667-782X. E-ISSN: 1667-782X.	Non-relevant by full text	Study of vegetative strips in Argentina, not relevant to EU.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Reconciling monitoring and modeling: An appraisal of river monitoring networks based on a spatial autocorrelation approach - emerging pollutants in the Danube River as a case study	Ginebreda, A.; Sabater-Liesa, L.; Rico, A.; Focks, A.; Barcelo, D.	Science of the Total Environment, (2018) Vol. 618, pp. 323-335. CODEN: STENDL. ISSN: 0048-9697.	Non-relevant by full text	Relevant for Water Framework Directive but not pesticide registration. The results of this study show how auto-correlation models can aid water managers to improve the design of river monitoring networks. Not relevant for EU Risk Assessment.			
In vitro effects of four heavy metals on glyphosate utilization by some bacteria isolated from rice fields.	Gloria, Okpala N. [Reprint Author]; Moneke, A. N.	African Journal of Microbiology Research, (AUG 18 2010) Vol. 4, No. 16, pp. 1775-1783. http://www.academicjournals.org/ajmr/ . ISSN: 1996-0808.	Non-relevant by full text	Experiments on the influence of heavy metals on the growth of isolated bacteria in the presence of glyphosate are not relevant to the data requirements.			
Consequences of phosphate application on glyphosate uptake by roots: Impacts for environmental management practices.	Gomes Marcelo Pedrosa Maccario Sophie; Lucotte Marc Labrecque Michel Juneau Philippe	The Science of the total environment, (2015 Dec 15) Vol. 537, pp. 115-9. Electronic Publication Date: 14 Aug 2015 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Analysis of glyphosate in roots and leaves of hydroponically cultivated willow plants are not relevant to the data requirements.			
Mobility of 2,4-Dichlorophenoxyacetic Acid, Glyphosate, and Metribuzine Herbicides in Terra Rossa-Amended Soil: Multiple Approaches with Experimental and Mathematical Modeling Studies.	Gurson, Ali Poyraz; Ozbay, Ismail; Ozhay, Bilge; Akyol, Gokce; Akyol, Nihat Hakan [Reprint Author]	Water Air and Soil Pollution, (SEP 2019) Vol. 230, No. 9, pp. Article No.: 220. http://www.springerlink.com/content/100344/ . CODEN: WAPLAC. ISSN: 0049-6979. E-ISSN: 1573-2932.	Non-relevant by full text	Soil used for A/D and mobility testing is not a natural soil but rather a soil mixture. Not relevant for EU risk assessment.			
Pesticide mixtures in the Swedish streams: Environmental risks, contributions of individual compounds and consequences of single-substance oriented risk mitigation	Gustavsson, Mikael; Kreuger, Jenny; Bundschuh, Mirco; Backhaus, Thomas	Science of the Total Environment, (2017) Vol. 598, pp. 973-983. CODEN: STENDL. ISSN: 0048-9697.	Non-relevant by full text	No glyphosate data presented.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Herbaceous or Salix miyabeana aX80X98SX64aX80X99 narrow buffer strips as a means to minimize glyphosate and aminomethylphosphonic acid leaching from row crop fields	HA©nault-Ethier, Louise; AX89lise Smedbol; Laurent Lepage; Marc Lucotte; Marcelo Pedrosa Gomes; Matthieu Moingt; Michel Labrecque; Philippe Juneau; Serge Paquet; Sophie Maccario	Science of the total environment (2017), pp. 1177-1186 ISSN: 0048-9697 Published by: Elsevier B.V. Source Note: 2017 Nov. 15, v. 598	Non-relevant by full text	Field trials in Canada with glyphosate resistant crops and Salix miyabeana buffer strips are not relevant to the data requirement and not representative to European agricultural practice			
Re-evaluation of groundwater monitoring data for glyphosate and bentazone by taking detection limits into account.	Hansen Claus Toni Ritz Christian Gerhard Daniel Jensen Jens Erik Streibig Jens Carl	The Science of the total environment, (2015 Dec 01) Vol. 536, pp. 68-71. Electronic Publication Date: 18 Jul 2015 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	No new data presented, only discussion of statistical methods to re-evaluation.			
Microbial pesticide removal in rapid sand filters for drinking water treatment - Potential and kinetics (vol 48, pg 71, 2014).	Hedegaard, Mathilde J. [Reprint Author]; Albrechtsen, Hans-Jorgen	Water Research, (OCT 1 2017) Vol. 122, pp. 708-713. http://www.sciencedirect.com/science/journal/00431354 . CODEN: WATRAG. ISSN: 0043-1354.	Non-relevant by full text	Erratum to Hedegaard et al. 2014; does not contain any data for glyphosate.			
Statistical optimization of glyphosate adsorption by biochar and activated carbon with response surface methodology.	Herath, G. A. D.; Poh LeongSoon; Ng WunJern; Poh, L. S.; Ng, W. J.	Chemosphere (2019), Volume 227, pp. 533-540, 28 refs. ISSN: 0045-6535 DOI: 10.1016/j.chemosphere.2019.04.078 Published by: Elsevier Ltd, Oxford URL (Availability): https://www.sciencedirect.com/science/article/pii/S0045653519307258	Non-relevant by full text	Test tube optimization of glyphosate adsorption using biochar and activated carbon. Not relevant for commercial application. Not relevant for EU risk assessment.			
Nutrient Loss Following Phragmites australis Removal in Controlled Soil Mesocosms	Herrman, Kyle S; Scott, Durelle T; Lenters, John D; Istanbuloglu, Erkan	Water, air and soil pollution (2012), Volume 223, Number 6, pp. 3333-3344 ISSN: 0049-6979 Published by: Springer-Verlag Source Note: 2012 July, v. 223, no. 6	Non-relevant by full text	No analysis of glyphosate or its metabolites.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Removal of 2,4-D, glyphosate, trifluralin, and butachlor herbicides from water by polysulfone membranes mixed by graphene oxide/TiO ₂ nanocomposite: study of filtration and batch adsorption	Hosseini, Navid; Toosi, Mohammad Reza (Reprint)	JOURNAL OF ENVIRONMENTAL HEALTH SCIENCE AND ENGINEERING, (JUN 2019) Vol. 17, No. 1, pp. 247-258. ISSN: 2052-336X.	Non-relevant by full text	Testing of new synthetic membranes for glyphosate adsorption/ rejection at lab scale not relevant for EU risk assessment.			
Removal of glyphosate from aqueous environment by adsorption using water industrial residual	Hu, Y S; Zhao, Y Q; Sorohan, B	Desalination (2011), Volume 271, Number 1-3, pp. 150-156 ISSN: 0011-9164 Published by: Elsevier B.V. Source Note: 2011 Apr. 15, v. 271, no. 1-3	Non-relevant by full text	Experiments on glyphosate adsorption to residual alum sludge from water treatment plants are not relevant to the data requirements.			
Meta-analysis of pesticide sorption in subsoil	Jarvis, Nicholas	Environmental Toxicology and Chemistry, (2018) Vol. 37, No. 3, pp. 755-761. CODEN: ETOCDK. ISSN: 0730-7268.	Non-relevant by full text	Comparison of the Koc model vs the power law model to characterize adsorption in sub-soils. While glyphosate existing data is considered, the approach is not relevant to EU risk assessment.			
Comments on the article: Re-evaluation of groundwater monitoring data for glyphosate and bentazone by taking detection limits into account	Johnsen, Anders R.; Thorling, Laerke; Helsel, Dennis R.; Larsen, Flemming	Science of the Total Environment, (2016) Vol. 557-558, pp. 914-915. CODEN: STENDL. ISSN: 0048-9697.	Non-relevant by full text	No new data presented, only disussion of statistical methods for re-evaluation.			
Effectiveness evaluation of glyphosate oxidation employing the H ₂ O ₂ /UVC process: toxicity assays with <i>Vibrio fischeri</i> and <i>Rhinella arenarum</i> tadpoles.	Junges Celina M; Vidal Eduardo E; Attademo Andres M; Mariani Melisa L; Cardell Leandro; Negro Antonio C; Cassano Alberto; Peltzer Paola M; Lajmanovich Rafael C; Zalazar Cristina S	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2013) Vol. 48, No. 3, pp. 163-70. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	No relevant information on environmental fate included. Paper is about removal of glyphosate from wastewater polluted by commercial formulations of glyphosate			Y

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticides Curbing Soil Fertility: Effect of Complexation of Free Metal Ions	Kaur, Sukhmanpreet; Kumar, Vijay Kumar, Vijay Chawla, Mohit (Reprint); Cavallo, Luigi (Reprint); Poater, Albert (Reprint); Upadhyay, Niraj (Reprint) Poater, Albert (Reprint) Upadhyay, Niraj (Reprint)	FRONTIERS IN CHEMISTRY, (4 JUL 2017) Vol. 5. ISSN: 2296-2646.	Non-relevant by full text	Experiments on reaction of pesticides with isolated metal salts are not relevant to EU data requirements.			
Straw mulch as a sustainable solution to decrease runoff and erosion in glyphosate-treated clementine plantations in Eastern Spain. An assessment using rainfall simulation experiments	Keesstra, S D; A Cerda; A Gimenez-Morera; A Novara; J Rodrigo-Comino; M Pulido; S D Prima	Catena (2019), Volume 174, pp. 95-103 ISSN: 0341-8162 Published by: Elsevier B.V. Source Note: 2019 Mar., v. 174	Non-relevant by full text	No measurement of glyphosate in this article. Glyphosate only used for weed control.			
Micropollutants from WWTPs in Rheinland-Palatinate	Knerr, Henning; Kolisch, Gerd; Jung, Thomas	Wasser und Abfall (Wiesbaden, Germany), (2015) Vol. 17, No. 1/2, pp. 23-28. CODEN: WAABFE. ISSN: 1436-9095.	Non-relevant by full text	Does not present any numerical measurement data. Discusses evaluation of occurrence and levels of micropollutants at waste water treatment plants of rural and urban geographies.			
Sorption and mineralization of organic pollutants during different stages of composting.	Lashermes G Houot S; Barriuso E	Chemosphere, (2010 Apr) Vol. 79, No. 4, pp. 455-62. Electronic Publication Date: 13 Feb 2010 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Sorption and mineralization in artificial lab compost mixtures are not relevant to the data requirement.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Real-Time and Near Real-Time Monitoring Options for Water Quality.	Linklater, Natalie; Oermeci, Banu [Reprint Author]	Ahuja, S. (2013) pp. 189-225. Monitoring Water Quality: Pollution Assessment, Analysis, and Remediation. Publisher: ELSEVIER SCIENCE BV, SARA BURGERHARTSTRAAT 25, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS. ISBN: 978-0-444-59395-5(H), 978-0-444-59404-4(P)	Non-relevant by full text	No specific monitoring data for glyphosate or AMPA is reported (a book chapter).			
Evaluation of glyphosate drift and anthropogenic atmospheric trace elements contamination by means of lichen transplants in a southern Italian agricultural district.	Lucadamo, Lucio [Reprint Author]; Corapi, Anna; Gallo, Luana	Air Quality Atmosphere and Health, (APR 2018) Vol. 11, No. 3, pp. 325-339. http://www.springerlink.com/content/1873-9326 . ISSN: 1873-9318. E-ISSN: 1873-9326.	Non-relevant by full text	Atmospheric contamination due to glyphosate and trace elements were monitored in a southern Italian agricultural district by means of transplanted thalli of the lichen <i>Pseudevernia furfuracea</i> . An unusual technique which provides information on atmospheric dispersion of glyphosate but not relevant to risk assessment.			
Occurrence of glyphosate and AMPA in an agricultural watershed from the southeastern region of Argentina.	Lupi Leonardo Miglioranza Karina S B Aparicio Virginia C; Bedmar Francisco Marino Damian Wunderlin Daniel A	The Science of the total environment, (2015 Dec 01) Vol. 536, pp. 687-694. Electronic Publication Date: 4 Aug 2015 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Analysis of soil, water and sediment samples from agricultural areas in Argentina cultivated with soybean are not representative for European agricultural practice.			
Glyphosate runoff and its occurrence in rainwater and subsurface soil in the nearby area of agricultural fields in Argentina.	Lupi, Leonardo; Francisco Bedmar; Marino Puricelli; Damian Marino; Virginia C Aparicio; Daniel Wunderlin; Karina S B Miglioranza	Chemosphere (2019), Volume 225, pp. 906-914 ISSN: 0045-6535 Published by: Elsevier Ltd Source Note: 2019 June, v. 225	Non-relevant by full text	Glyphosate measurements in rainfall in Brazil not relevant for EU risk assessment. Soil column leaching experiment on an Argentinian soil in which the control also contains glyphosate, and is not relevant to EU risk assessment.			
Combining experimental techniques with non-linear numerical models to assess the sorption of pesticides on soils.	Magga Zoi Tzovolou Dimitra N; Theodoropoulou Maria A; Tsakiroglou Christos D	Journal of contaminant hydrology, (2012 Mar 15) Vol. 129-130, pp. 62-9. Electronic Publication Date: 8 Oct 2011 Journal code: 8805644. E-ISSN: 1873-6009. L-ISSN: 0169-7722.	Non-relevant by full text	The article describes batch experiments to derive equilibrium and non-equilibrium sorption parameters for glyphosate. However, the current guideline (OECD 106) for those experiments was not followed (use of triple distilled water instead of CaCl ₂ , only liquid phase analyzed but stability of test item not shown, test concentrations not reported). Further, continuous flow soil column experiments were conducted with synthetic groundwater. This experiment is not relevant according to the data requirements.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticides in Mississippi air and rain: a comparison between 1995 and 2007.	Majewski Michael S Coupe Richard H; Foreman William T; Capel Paul D	Environmental toxicology and chemistry, (2014 Jun) Vol. 33, No. 6, pp. 1283-93. Electronic Publication Date: 4 Apr 2014 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Non-relevant by full text	Analysis of air and rainfall samples from agricultural areas in Mississippi (USA) cultivated with soybean are not representative for European agricultural practice			
Bioremediation of Glyphosate by Bacteria Isolated from Glyphosate Contaminated Soil.	Malviya, B. J. [Reprint Author]; Jadeja, V. J.; Sherathiya, H. M. [Reprint Author]; Parakhia, M. V.; Tomar, R. S.; Vaja, M. B.; Sherathia, D. N.	Journal of Pure and Applied Microbiology, (DEC 2015) Vol. 9, No. 4, pp. 3315-3319. ISSN: 0973-7510.	Non-relevant by full text	Study of bacterial isolates from area of glyphosate production plant in India for ability to degrade glyphosate as a sole carbon source. Not relevant to EU risk assessment.			
Comparative environmental impacts of glyphosate and conventional herbicides when used with glyphosate-tolerant and non-tolerant crops.	Mamy Laure Gabrielle Benoit; Barriuso Enrique	Environmental pollution (Barking, Essex : 1987), (2010 Oct) Vol. 158, No. 10, pp. 3172-8. Electronic Publication Date: 6 Aug 2010 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Modelling approach on balances and overall toxicity potential; no new environmental fate data generated.			
Glyphosate fate in soils when arriving in plant residues.	Mamy Laure; Barriuso Enrique; Gabrielle Benoit	Chemosphere, (2016 Jul) Vol. 154, pp. 425-433. Electronic Publication Date: 12 Apr 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Laboratory experiment on oilseed rape plant residues treated with glyphosate and placed on/mixed with soil samples are not relevant to the data requirement.			
Residue determination and levels of glyphosate in surface waters, sediments and soils associated with oil palm plantation in Tasik Chini, Pahang, Malaysia	Mardiana-Jansar, K.; Ismail, B. S.	AIP Conference Proceedings (2014), 1614(1, 2014 UKM FST Postgraduate Colloquium), 795-802 CODEN: APCPCS; ISSN: 0094-243X	Non-relevant by full text	Field trials in oil palm plantation in Malaysia are not representative for European agricultural practice.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Quantitation and Adsorption of Glyphosate Using Various Treated Clay	Mattos, Rodrigo ; Khan, Sabir ; Hussain, Sajjad ; de Alencar Simoni, Jose	Zeitschrift fuer Physikalische Chemie, Vol. 231, No. 11-12, pp. 1815-1829, 20171101 ISSN: 0942-9352 E-ISSN: 2196-7156 DOI: 10.1515/zpch-2016-0942 Published by: Walter de Gruyter GmbH , Munich	Non-relevant by full text	Adsorption studies for glyphosate conducted with clay chemically modified with metals. Not relevant to natural soils.			
Bacterial Community Composition and Genes for Herbicide Degradation in a Stormwater Wetland Collecting Herbicide Runoff	Mauffrey, Florian; Pierre-Yves Baccara; Christelle Gruffaz; Stéphanie Vuilleumier; Gwenaél Imfeld	Water, air, and soil pollution (2017), Volume 228, Number 12, 452 p. ISSN: 0049-6979 Published by: Springer International Publishing Source Note: 2017 Dec., v. 228, no. 12	Non-relevant by full text	Investigation of bacterial community composition and genetic analyses not relevant to the data requirement			
Quantitative evaluation of noncovalent interactions between glyphosate and dissolved humic substances by NMR spectroscopy.	Mazzei Pierluigi Piccolo Alessandro	Environmental science & technology, (2012 Jun 05) Vol. 46, No. 11, pp. 5939-46. Electronic Publication Date: 24 May 2012 Journal code: 0213155. E-ISSN: 1520-5851. L-ISSN: 0013-936X.	Non-relevant by full text	Experiments on reaction of glyphosate with isolated humic and fulvic acids are not related to the data requirements			
Land use effects on pesticides in sediments of prairie pothole wetlands in North and South Dakota.	McMurry Scott T Belden Jason B; Smith Loren M; Morrison Shane A; Daniel Dale W; Kensinger Bart J Euliss Betty R; Euliss Ned H Jr; Tangen Brian A	The Science of the total environment, (2016 Sep 15) Vol. 565, pp. 682-689. Electronic Publication Date: 21 May 2016 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Analysis of wetland sediment samples from prairie pothole wetlands in North and South Dakota (USA) are not representative for European conditions and agricultural practice.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate and Aminomethylphosphonic acid (AMPA) contents in the respirable dust emitted by an agricultural soil of the central semiarid region of Argentina	Mendez, Mariano J. (Reprint); Ramirez Haberkon, Nancy B.; Buschiazzi, Daniel E. Mendez, Mariano J. (Reprint); Aimar, Silvia B.; Buschiazzi, Daniel E. Aparicio, Virginia C.; De Geronimo, Eduardo; Costa, Jose L. Buschiazzi, Daniel E.	AEOLIAN RESEARCH, (DEC 2017) Vol. 29, pp. 23-29. ISSN: 1875-9637.	Non-relevant by full text	Analysis of artificially generated dust from Argentinian field locations are not relevant to the data requirements and not representative for European agricultural practice.			
Glyphosate persistence in seawater.	Mercurio Philip Flores Florita; Negri Andrew P Mueller Jochen F Carter Steve	Marine pollution bulletin, (2014 Aug 30) Vol. 85, No. 2, pp. 385-90. Electronic Publication Date: 24 Jan 2014 Journal code: 0260231. E-ISSN: 1879-3363. L-ISSN: 0025-326X.	Non-relevant by full text	Experiments on glyphosate degradation in seawater samples from the Great Barrier Reef (Australia) are not representative to European conditions			
Trace substance removal in wastewater treatment plants- Experiences in Baden-Wuerttemberg	Metzger, Steffen; Roessler, Annette	Gewaesserschutz, Wasser, Abwasser (2014), 234, 57/1-57/19 CODEN: GWABDO; ISSN: 0342-6068	Non-relevant by full text	Main focus of the paper is use of activated carbon to remove contaminants. No glyphosate data presented. AMPA data presented in only one figure. Text indicates AMPA not effectively removed by amounts of activated carbon being studied. Since the AMPA is derived from other sources, relevance to glyphosate degradation cannot be established.			
Molecularly imprinted polymer-based electrochemical sensor for the sensitive detection of glyphosate herbicide.	Minh Huy Do; Florea, A.; Farre, C.; Bonhomme, A.; Bessueille, F.; Vocanson, F.; Nhu Trang Tran Thi; Jaffrezic-Renault, N.	International Journal of Environmental Analytical Chemistry (2015), Volume 95, Number 15, pp. 1489-1501, 49 refs. ISSN: 0306-7319 Published by: Taylor & Francis, Abingdon URL (Availability): http://www.tandfonline.com/loi/geac20	Non-relevant by full text	Analytical method. Fortified tap water samples used to demonstrate method; no real world samples analyzed.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Biodegradation of glyphosate herbicide in vitro using bacterial isolates from four rice fields.	Moneke, A. N. [Reprint Author]; Okpala, G. N.; Anyanwu, C. U.	African Journal of Biotechnology, (JUN 28 2010) Vol. 9, No. 26, pp. 4067-4074. ISSN: 1684-5315.	Non-relevant by full text	experiments on in-vitro biodegradation with isolated bacteria strains are not relevant to the data requirement			
Environmental behaviour of glyphosate. Comportamento ambiental do glifosato.	Moraes, P. V. D.; Rossi, P.	Scientia Agraria Paranaensis (2010), Volume 9, Number 3, pp. 22-35 ISSN: 1677-4310 Published by: Western Parana State University, Parana URL (Availability): http://e-revista.unioeste.br/index.php/scientiaagraria/article/view/5258/3919	Non-relevant by full text	Literature review, secondary source of information.			
Methods Related to Herbicide Dissipation or Degradation under Field or Laboratory Conditions.	Mueller, Thomas C. [Reprint Author]; Senseman, Scott A.	Weed Science, (2015) Vol. 63, No. Sp. Iss. 1, pp. 133-139. http://www.wssa.net/WSSA/Pubs/WeedSci.htm . CODEN: WEESA6. ISSN: 0043-1745. E-ISSN: 1550-2759.	Non-relevant by full text	No measurement of glyphosate or AMPA. Glyphosate was used for weed control.			
Application of ferric chloride for removal of Glyphosate: modeling of axial and radial flow impellers using artificial neural networks.	Nourouzi, M. M.; Chuah, T. G.; Choong, T. S. Y.	Journal of Environmental Engineering (2012), Volume 138, Number 11, pp. 1157-1164 ISSN: 0733-9372 DOI: 10.1061/(ASCE)EE.1943-7870.0000580 Published by: American Society of Civil Engineers (ASCE), Reston URL (Availability): http://ascelibrary.org/doi/abs/1	Non-relevant by full text	Investigation of formation of insoluble ferric chloride complex is not relevant to the data requirement.			
Occurrence of pesticides not regularly monitored in the hydrosphere of the Czech Republic	Ocenaskova, Vera; Chrastina, David; Medek, Petr; Jursikova, Kristyna; Jobanek, Roman; Martinkova, Pavla	Vodohospodarske Technicko-Ekonomicke Informace (2012), 54(6), 13S-16S Published in: Vodni Hospod., 62(12) CODEN: VTINF8; ISSN: 0322-8916	Non-relevant by full text	No glyphosate data presented. AMPA data in only one figure. Since the AMPA is derived from other sources, relevance to glyphosate degradation cannot be established.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Determination of glyphosate and aminomethylphosphonic acid by sequential-injection reversed-phase chromatography: method improvements and application in adsorption studies.	Oliveira Pereira Erico A; Masini Jorge C Freitas Melo Vander Abate Gilberto	Analytical and bioanalytical chemistry (2019 Apr) Vol. 411, No. 11, pp. 2317-2326. Electronic Publication Date: 23 Feb 2019 Journal code: 101134327. E-ISSN: 1618-2650. L-ISSN: 1618-2642.	Non-relevant by full text	Analytical method and adsorption testing using a glyphosate formulation: Roundup® Original DI.			
Effects of pig slurry application on soil physical and chemical properties and glyphosate mobility.	Oliveira, D. A. de; Pinheiro, A.; Veiga, M. da; de Oliveira, D. A.; da Veiga, M.	Revista Brasileira de Ciencia do Solo (2014), Volume 38, Number 5, pp. 1421-1431 ISSN: 0100-0683 DOI: 10.1590/S0100-06832014000500007 Published by: Sociedade Brasileira de Ciencia do Solo, Vicosa URL (Availability): http://www.scielo.br/scielo.php?script=	Non-relevant by full text	Field trials on Brazilian sub-tropical savannah sites amended with pig slurry are not relevant to the data requirements and not representative of European conditions and agricultural practice.			
Influence of electrolyte composition and pH on glyphosate sorption by cow-dung amended soil	Ololade Oluwaranti Olubunmi; Aiyesanmi Ademola Festus; Okoronkwo Afamefuna Elvis Ololade Isaac Ayodele; Adanigbo Pelumi	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2019) Vol. 54, No. 9, pp. 758-769. Electronic Publication Date: 11 Sep 2019 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	Nigerian soil, no textural characterization of soil, non-guideline CaCl2 concentration and no basis for comparison to guideline studies.			
Influence of cow-dung amendment on glyphosate mobility in soil	Ololade, Oluwaranti Olubunmi; Aiyesanmi, Ademola Festus; Okoronkwo, Afamefuna Elvis; Adanigbo, Pelumi; Ololade, Isaac Ayodele	Toxicological & Environmental Chemistry, (2019) Vol. 101, No. 3-6, pp. 265-280. CODEN: TECSDY. ISSN: 1029-0486.	Non-relevant by full text	Adsorption/desorption of Nigerian soil and cow dung from grazing cows. Not relevant to EU risk assessment.			
Study of Interaction Between Glyphosate and Goethite Using Several Methodologies: an Environmental Perspective	Orcelli, Thiago; Eduardo di Mauro; Alexandre Urbano; Daniel F Valezi; Antonio C S da Costa; C ssia Thais B V Zaia; Dimas A M Zaia	Water, air, and soil pollution (2018), Volume 229, Number 5, 150 p. ISSN: 0049-6979 Published by: Springer International Publishing Source Note: 2018 May, v. 229, no. 5	Non-relevant by full text	Information regarding adsorption of glyphosate onto goethite under varying pH. Not relevant to EU risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Interaction of pesticides with natural and synthetic solids. Evaluation in dynamic and equilibrium conditions.	Otalvaro Julian Ortiz; Brigante Maximiliano Brigante Maximiliano	Environmental science and pollution research international, (2018 Mar) Vol. 25, No. 7, pp. 6707-6719. Electronic Publication Date: 19 Dec 2017 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Non-relevant by full text	Paper includes study of binding of glyphosate to Humic acid and effect of binding on dissolution of humic acid. Not relevant since binding to soil components were studied separately and not in soil.			
Glyphosate transport in two Louisiana agricultural soils: miscible displacement studies and numerical modeling	Padilla, Joshua T.; Magdi Selim, H.	Soil Systems, (2018) Vol. 2, No. 3, pp. 53. CODEN: SSOYAQ. ISSN: 2571-8789.	Non-relevant by full text	Does not follow OECD column leaching or adsorption / desorption guidelines.			
Time-dependent sorption and desorption of glyphosate in soils: multi-reaction modeling	Padilla, Joshua T.; Selim, H. Magdi	Vadose Zone Journal, (2019) Vol. 18, No. 1, pp. No pp. given. CODEN: VZJAAB. ISSN: 1539-1663.	Non-relevant by full text	Experiments on batch adsorption and time-dependent sorption are not in line with OECD 106 guideline or guidance on aged sorption, thus not relevant to the data requirement.			
Innovative determination of polar organophosphonate pesticides based on high-resolution Orbitrap mass spectrometry.	Padilla-Sanchez Juan Antonio Plaza-Bolanos Patricia; Romero-Gonzalez Roberto; Grande-Martinez Angel; Thurman Earl Michael; Garrido-Frenich Antonia	Journal of mass spectrometry : JMS, (2012 Nov) Vol. 47, No. 11, pp. 1458-65. Journal code: 9504818. E-ISSN: 1096-9888. L-ISSN: 1076-5174.	Non-relevant by full text	Development and performance of a multi-component analytical method. For the analysis of agricultural soil samples, no experimental details are reported.			
Genotoxic effects in the Eastern mudminnow (Umbra pygmaea) after prolonged exposure to River Rhine water, as assessed by use of the in vivo SCE and Comet assays	Penders, E. J. M.; Spenkelink, A.; Hoogenboezem, W.; Rotteveel, S. G. P.; Maas, J. L.; Alink, G. M.	Environmental and Molecular Mutagenesis, (2012) Vol. 53, No. 4, pp. 304-310. CODEN: EMMUEG. ISSN: 0893-6692.	Non-relevant by full text	Toxicity of river water. No environmental data on glyphosate presented.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Adsorption of glyphosate on Brazilian subtropical soils rich in iron and aluminum oxides	Pereira Erico A Oliveira; Masini Jorge C Melo Vander Freitas Abate Gilberto	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2019) Vol. 54, No. 11, pp. 906-914. Electronic Publication Date: 25 Jul 2019 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Non-relevant by full text	Does not follow guideline OECD adsorption/desorption method.			
Quantitative analysis of glyphosate, glufosinate and AMPA in irrigation water by in situ derivatization-dispersive liquid-liquid microextraction combined with UPLC-MSMS	Pinto, Edgar; Antonio Gomes Soares; Isabel M P L V O Ferreira	Analytical methods (2018), Volume 10, Number 5, pp. 554-561 ISSN: 1759-9679 Published by: The Royal Society of Chemistry Source Note: 2018 Feb. 1, v. 10, no. 5	Non-relevant by full text	Analytical method for detection of glyphosate, AMPA, glufosinate in water. Real water samples analyzed by locations not identified.			
Effect of Herbicides Application on the Soil Biological Activity in the Tree Nursery.	Polyakova, N. N. [Reprint Author]; Seraya, L. G.; Sidorenko, O. D.; Beloshapkina, O. O.; Larina, G. E.	Agrokhimiya, (DEC 2018) No. 12, pp. 35-41. http://www.maik.ru/cgi-bin/list.pl?page=agro . CODEN: AGKYAU. ISSN: 0002-1881. E-ISSN: 0002-1881.	Non-relevant by full text	Non-EU studies not relevant to EU. Study of cellulose degradation in glyphosate treated soil conducted in Russia.			
Glyphosate levels in soil, water and air before and after application on agricultural farms	Prasanthi, Y.; Ferguson, D.; Kettleson, E.; Schaffer, C.; Adhikari, A.; Loganathan, B. G.	Organohalogen Compounds, (2012) Vol. 74, pp. 316-319, 4 pp.. CODEN: ORCOEP.	Non-relevant by full text	Non-EU study. Measurement of glyphosate concentrations in soil and runoff water from university site in Kentucky, USA. Not relevant for EU risk assessment.			
Can rainwater induce Fenton-driven degradation of herbicides in natural waters?.	Qin Junhao Li Huashou; Lin Chuxia; Chen Gu	Chemosphere, (2013 Aug) Vol. 92, No. 8, pp. 1048-52. Electronic Publication Date: 29 Mar 2013 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Non-relevant by full text	Study not conducted in natural system. No direct relevance yet to risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Biomonitoring of pesticides by pine needles - Chemical scoring, risk of exposure, levels and trends	Ratola, Nuno; Homem, Vera; Silva, Jose Avelino; Araujo, Rita; Amigo, Jose Manuel; Santos, Lucia; Alves, Arminda	Science of the Total Environment, (2014) Vol. 476-477, pp. 114-124. CODEN: STENDL. ISSN: 0048-9697.	Non-relevant by full text	No monitoring of glyphosate in the study.			
Glyphosate Residues in Groundwater, Drinking Water and Urine of Subsistence Farmers from Intensive Agriculture Localities: A Survey in Hopelchen, Campeche, Mexico.	Rendon-von Osten Jaime; Dzul-Caamal Ricardo	International journal of environmental research and public health, (2017)0603 Vol. 14, No. 6. Electronic Publication Date: 3 Jun 2017 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: PMC-PMC5486281.	Non-relevant by full text	Analysis of groundwater, and drinking water samples from intensive agricultural areas in Mexico are not representative for European agricultural practice. Analysis of urine samples is not relevant to the data requirements			
Surveying upstate NY well water for pesticide contamination: Cayuga and Orange counties	Richards, Brian K.; Pacenka, Steven; Salvucci, Anthony E.; Saia, Sheila M.; Whitbeck, Luanne F.; Furdyna, Peter M.; Steenhuis, Tammo S.	Ground Water Monitoring & Remediation (2012), 32(1), 73-82 CODEN: GWMREV; ISSN: 1069-3629	Non-relevant by full text	Analysis of pesticides in groundwater wells in the US not relevant to EU risk assessment. No glyphosate or AMPA measurements reported.			
Construction of a combined soil quality indicator to assess the effect of glyphosate application	Romano-Armada, N.; Amoroso, M. J.; Rajal, V. B.	Science of the Total Environment (2019), Volume 682, pp. 639-649, 74 refs. ISSN: 0048-9697 DOI: 10.1016/j.scitotenv.2019.05.079 Published by: Elsevier Ltd, Oxford	Non-relevant by full text	Soil quality assessment conducted based on Argentinian soils. Not relevant fo EU risk assessment.			
Water quality of the main tributaries of the Parana Basin: glyphosate and AMPA in surface water and bottom sediments	Ronco, A.E.; Marino, D.J.G.; Apartin, C.D.; Abelando, M.; Almada, P.	Environmental Monitoring and Assessment (1 Aug 2016) Volume 188, Number 8, arn: 458, 37 refs. CODEN: EMASDH ISSN: 0167-6369 E-ISSN: 1573-2959 DOI: 10.1007/s10661-016-5467-0 Published by: Springer International Publishing,	Non-relevant by full text	Analyses of glyphosate and AMPA water and sediment samples from Argentinian agricultural areas planted with genetically modified glyphosate-resistant crops are not representative for European agricultural practice			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Removal of phosphorus from phosphonate-loaded industrial wastewaters via precipitation/flocculation	Rott, Eduard (Reprint); Minke, Ralf Steinmetz, Heidrun	JOURNAL OF WATER PROCESS ENGINEERING, (JUN 2017) Vol. 17, pp. 188-196. ISSN: 2214-7144.	Non-relevant by full text	No data on glyphosate or AMPA presented. Only references to journal articles before 2010.			
Greening conditions, glyphosate skepticism and groundwater protection: Three G-Core issues. Greeningauflagen, Glyphosatskepsis und Grundwasserschutz: Drei G-Themen im Fokus	Rudolph, W.	Agrarmanager (2015), Number 8, pp. 58-61 Published by: Deutscher Landwirtschaftsverlag GmbH, Muenchen URL (Availability): http://agrarmanager.agrarheute.com/	Non-relevant by full text	There is no environmental fate data related to glyphosate. The article talks about farm machinery.			
Oxygen isotope signature of UV degradation of glyphosate and phosphonoacetate: tracing sources and cycling of phosphonates.	Sandy Edward H Blake Ruth E; Chang Sae Jung; Jun Yao; Yu Chan	Journal of hazardous materials, (2013 Sep 15) Vol. 260, pp. 947-54. Electronic Publication Date: 29 Jun 2013 Journal code: 9422688. E-ISSN: 1873-3336. L-ISSN: 0304-3894.	Non-relevant by full text	Experiments on the reaction mechanism of molecule cleavage under UV radiation at pH 2.5 are not relevant to the data requirements.			
Adsorption Kinetics of Glyphosate and Copper(II) Alone and Together on Two Types of Soils	Wang, Yu-Jun; Cui, Yu-Xia; Zhou, Dong-Mei; Wang, Shen-Qiang; Xiao, An-Yun; Wang, Ru-Hai; Zhang, Hailin	Soil Science Society of America journal (2009) , pp. 1995-2001 ISSN: 1435-0661 Published by: Soil Science Society Source Note: 2009 Nov., v. 73, no. 6	Non-relevant by full text	No endpoints for risk assessment are generated. Adsorption kinetics were investigated in a flow method (column) experiment, but no adsorption coefficient determined.			
Adsorption of glyphosate on clays and soils from Parana state: Effect of pH and phosphate competitive adsorption of phosphate .	Da Cruz, Lutecia Hiera; De Santana, Henrique; Bussamra Vieira Zaia, Cassia Thais; Morozin Zaia, Dimas Augusto	Brazilian Archives of Biology and Technology, (MAY 2007) Vol. 50, No. 3, pp. 385-394. ISSN: 1516-8913.	Non-relevant by full text	No endpoints for risk assessment are generated. Only amount of glyphosate adsorbed reported, no Koc/Kfoc.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Avoiding Glyphosate and Atrazine Runoff and Groundwater Contamination	Sandall, Leah; Bauer, Erin; Ogg, Clyde	Crop watch (2009) , Number 18 Source Note: 2009 June 26, no. 18	Non-relevant by full text	Opinion article that provides no new data that can be used for risk assessment. Guidance for farmers on how to avoid runoff of glyphosate and atrazine.			
Biodegradation of glyphosate in rhizospheric soil cultivated with Glycine max, Canavalia ensiformis and Stizolobium aterrimum.	Santos, J. B.; Ferreira, E. A.; Fialho, C. M. T.; Santos, E. A.; Galon, L.; Concenco, G.; Asiazu, I.; Silva, A. A.	Planta Daninha (2009) , Volume 27, Number 4, pp. 781-787, 25 refs. ISSN: 0100-8358 Published by: Sociedade Brasileira da Ciencia das Plantas Daninhas, Vicoso URL (Availability): http://www.scielo.br/pd	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Untreated and previously cultivated Brazilian soil (Red-Yellow Argisol) was incubated with glyphosate for 32 days. Only the evolved CO2 was measured. No endpoints for risk assessment are generated.			
Before the curtain falls: endocrine-active pesticides--a German contamination legacy.	Schulte-Oehlmann Ulrike Oehlmann Jorg; Keil Florian	Reviews of environmental contamination and toxicology, (2011) Vol. 213, pp. 137-59. Journal code: 8703602. ISSN: 0179-5953. L-ISSN: 0179-5953.	Non-relevant by full text	Literature review on pesticide occurrence in Germany. Neither experimental data nor specific results for glyphosate are reported			
The impact of four herbicides on soil minerals	Sebiomo, A.; Ogundero, V. W.; Bankole, S. A.	Research Journal of Environmental and Earth Sciences (2012), 4(6), 617-624 CODEN: RJEEAC; ISSN: 2041-0492 URL: http://maxwellsci.com/print/rjees/v4-617-624.pdf	Non-relevant by full text	Soils tested originate from region not representative for Europe (Nigeria) no analysis of glyphosate residues, only mineral ions (calcium, sodium, potassium, magnesium, zinc and iron)			
Statistical optimization study of adsorption parameters for the removal of glyphosate on forest soil using the response surface methodology	Sen, Kamallesh; Jayanta Kumar Datta; Naba Kumar Mondal; Soumya Chatteraj	Environmental earth sciences (2017), Volume 76, Number 1, 22 p. ISSN: 1866-6280 Published by: Springer Berlin Heidelberg Source Note: 2017 Jan., v. 76, no. 1	Non-relevant by full text	Experiments on glyphosate removal by Indian forest soils are not relevant to the data requirements.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Adsorption and desorption behavior of herbicide using bio-based materials	Shanmugam, S. R.; Adhikari, S.; Nam HyungSeok; Patil, V.; Nam, H. S.	Transactions of the ASABE (2019), Volume 62, Number 6, pp. 1435-1445 ISSN: 2151-0032 DOI: 10.13031/trans.13255 Published by: American Society of Agricultural and Biological Engineers, St Joseph	Non-relevant by full text	Adsorption of glyphosate to activated carbon and biochar was measured as a potential soil amendment to bind glyphosate. Not relevant to EU risk assessment.			
Concentrations and specific loads of glyphosate, diuron, atrazine, nonylphenol and metabolites thereof in French urban sewage sludge.	Ghanem Aline; Bados Philippe; Estaun Arantza Rua; De Alencastro Luis Felipe; Taibi Salima; Einhorn Jacques; Mougin Christian	Chemosphere, (2007 Nov) Vol. 69, No. 9, pp. 1368-73. Electronic Publication Date: 22 Jun 2007	Non-relevant by full text	Test system not relevant for the European regulatory purposes. The concentration of glyphosate in sewage sludge was determined.			
Operational integration of time dependent toxicity impact category in dynamic LCA	Shimako, Allan Hayato; Tiruta-Barna, Ligia; Ahmadi, Aras	Science of the Total Environment, (2017) Vol. 599-600, pp. 806-819. CODEN: STENDL. ISSN: 0048-9697.	Non-relevant by full text	Life-cycle assessment. No specific glyphosate end-points that can be used in EU assessment.			
Concentrations of Glyphosate, Its Degradation Product, Aminomethylphosphonic Acid, and Glufosinate in Ground-and Surface-Water, Rainfall, and Soil Samples Collected in the United States, 2001-06	Scribner, Elisabeth A; Battaglin, William A; Gilliom, Robert J; Meyer, Michael T	Scientific Investigations Report. U.S. Geological Survey. no. 2007-5122, 112 pp. 2007. URL (Document): http://pubs.usgs.gov/sir/2007/5122/	Non-relevant by full text	Publication not dealing with Japan/EU representative conditions (i.e. monitoring location). The concentration of glyphosate and AMPA was determined in soil, rainfall, ground- and surface water samples collected in the U.S..			
Impact of grassed waterways and compost filter socks on the quality of surface runoff from corn fields.	Shipitalo Martin J; Bonta James V; Dayton Elizabeth A; Owens Lloyd B	Journal of environmental quality, (2010 May-Jun) Vol. 39, No. 3, pp. 1009-18. Electronic Publication Date: 13 Apr 2010 Journal code: 0330666. ISSN: 0047-2425. L-ISSN: 0047-2425.	Non-relevant by full text	Field experiments performed in the US on concentration of glyphosate in run-off from experimental watersheds cropped with glyphosate-tolerant corn collected in grassed artificial waterways and removal by artificial compost filter socks. These are not relevant to the data requirements and not representative for EU agricultural practice.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Cosorption of zinc and glyphosate on two soils with different characteristics.	Wang, Yu-Jun; Zhou, Dong-Mei; Sun, Rui-Juan; Cang, Long; Hao, Xiu-Zhen	Journal of Hazardous Materials, (SEP 1 2006) Vol. 137, No. 1, pp. 76-82.	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Adsorption isotherms were determined for glyphosate in absence and presence of Zn. NaNO ₃ was used as test solution instead of CaCl ₂ . Isotherms are shown graphically but no linear equations are presented. No endpoints can be derived from the study.			
Glyphosate bioavailability in soil.	Shushkova Tatyana Ermakova Inna; Leontievsky Alexey	Biodegradation, (2010 Jun) Vol. 21, No. 3, pp. 403-10. Electronic Publication Date: 10 Nov 2009 Journal code: 9100834. E-ISSN: 1572-9729. L-ISSN: 0923-9820.	Non-relevant by full text	experiments on soil degradation and adsorption in soil columns amended with mineral salts and introduced bacteria strains are not relevant to the data requirement			
Complex Interaction and Adsorption of Glyphosate and Lead in Soil	Si, You-Bin; Xiang, Yan; Tian, Chao; Si, Xiong-Yuan; Zhou, Jing; Zhou, Dong-Mei	Soil & sediment contamination (2013), Volume 22, Number 1, pp. 72-84 ISSN: 1549-7887 Published by: Taylor & Francis Group Source Note: 2013 Jan. 1, v. 22, no. 1	Non-relevant by full text	Experiments on the influence of Pb on glyphosate adsorption in NaNO ₃ solution are not relevant to the data requirements			
Degradation of glyphosate in soil and its effect on fungal population .	Sailaja K K; Satyaprasad K	Journal of environmental science and engineering, (2006 Jul) Vol. 48, No. 3, pp. 189-90.	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Glyphosate (Glycel, 41% pure) was sprayed on the foliage of weeds instead of bare soil.			
Delayed degradation in soil of foliar herbicides glyphosate and sulcotrione previously absorbed by plants : consequences on herbicide fate and risk assessment .	Doublet Jeremy; Mamy Laure; Barriuso Enrique	Chemosphere, (2009 Oct) Vol. 77, No. 4, pp. 582-9. Electronic Publication Date: 21 Jul 2009	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Glyphosate was sprayed on leaves of oilseed rape and maize plants instead of bare soil.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate and turbidity removal in water conditions by clarification with Tanfloc. Remocao de glifosato e turbidez em meio aquoso por meio da clarificacao com Tanfloc	Silva, J. T. B.; Rocha, K. C.; Cuba, R. M. F.	Periodico Tche Quimica (2018), Volume 15, Number 30, pp. 489-496, 39 refs. ISSN: 1806-0374 Published by: Grupo Tche Quimica, Porte Alegre URL (Availability): http://www.deboni.he.com.br/Periodico30.pdf	Non-relevant by full text	Demonstrates glyphosate removal from raw water at pH 5.0 - 5.5 using natural tannin flocculant, but glyphosate concentration tested (8 mg/L) is not a relevant concentration for water treatment.			
Determination of Glyphosate and Its Major Metabolite Aminomethylphosphonic Acid in River Water and Tap Water by High-Performance Liquid Chromatography with Postcolumn Derivatization Method	Yoshioka, Chihiro; Suzuki, Hiroshi; Ishikawa, Masako; Yokokura, Takefumi; Shirasaki, Toshihiro	Bunseki Kagaku [Bunseki Kagaku]. Vol. 55, no. 3, pp. 177-184. 2006. ISSN: 0525-1931 Published by: Japan Society for Analytical Chemistry, Agune gijutsu Senta 1-25 Minami-Aoyama 5-Chome, Minato-ku Tokyo 107-0062 Japan	Non-relevant by full text	The article is about the development of analytical method to analyze Glyphosate and AMPA in river water and tap water which is considered not relevant for the submission in Japan.			
Direct sensitive spectrophotometric determination of glyphosate by using ninhydrin as a chromogenic reagent in formulations and environmental water samples.	Bhaskara, B. L.; Padmarajaiah Nagaraja; Nagaraja, P.	Helvetica Chimica Acta (2006) , Volume 89, Number 11, pp. 2686-2693 ISSN: 0018-019X DOI: 10.1002/hlca.200690240 Published by: John Wiley and Sons Ltd, Chichester URL (Availability): http://www3.interscience.wiley.com/cgi-bin/abstract/113471702/ABSTRACT	Non-relevant by full text	Publication dealing with analytical methods / development. Method validation was performed with field water sampled from irrigated land in India.			
Projected impact of climate change and chemical emissions on the water quality of the European rivers Rhine and Meuse: A drinking water perspective	Sjerps, Rosa M. A.; ter Laak, Thomas L.; Zwolsman, Gertjan J. J. G.	Science of the Total Environment, (2017) Vol. 601-602, pp. 1682-1694. CODEN: STENDL. ISSN: 0048-9697.	Non-relevant by full text	No new data are presented. Modeling of future surface water quality (year 2050) based on assumptions on climate change and future emission scenarios are not relevant to the data requirements.			
Dissipation of four forest-use herbicides at high latitudes.	Newton Mike; Cole Elizabeth C; Tinsley Ian J	Environmental science and pollution research international, (2008 Oct) Vol. 15, No. 7, pp. 573-83. Electronic Publication Date: 28 Aug 2008	Non-relevant by full text	Publications not dealing with Japan/EU representative uses / conditions (e.g. field location) . Dissipation of glyphosate was investigated in forests of Alaska.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Dynamic of glyphosate mineralization in different soil types.	Alexa, E.; Bragea, M.; Sumalan, R.; Lazureanu, A.; Negrea, M.; Iancu, S.	Romanian Agricultural Research (2009) , Number 26, pp. 57-60, 5 refs. ISSN: 1222-4227 Published by: National Agricultural Research and Development Institute, Fundulea	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Different soils from Romania were incubated with glyphosate for 40 days. Only the evolved CO ₂ was measured. No endpoints can be derived.			
What is causing the harmful algal blooms in Lake Erie?	Smith, Douglas R; King, Kevin W; Williams, Mark R	Journal of soil and water conservation (2015), Volume 70, Number 2, p. 27A-29A. ISSN: 0022-4561 Source Note: 2015 Mar., v. 70, no. 2	Non-relevant by full text	Paper is a general review with no new data about reasons for increased soluble P loading to Lake Erie.			
Effect in glyphosate adsorption on clays and soils heated and characterization by FT-IR spectroscopy.	De Santana, Henrique; Toni, Luis R. M.; De B. Benetoli, Luis O.; Zaia, Cassia T. B. V.; Rosa, Maurilio Jr.; Zaia, Dimas A. M.	Geoderma, (DEC 15 2006) Vol. 136, No. 3-4, pp. 738-750. http://www.journals.elsevier.com/geoderma/#description .	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Adsorption of glyphosate was tested on clay minerals and soil. The effect of heating on the clay and soils was investigated. The glyphosate concentration in the supernatant was not determined. No endpoints can be derived.			
Effect of Glyphosate on Soil Enzyme	Hu, L; He, W-X; Wang, X-D; Zheng, F-L	Journal of Agro-Environment Science [J. Agro-Environ. Sci.]. Vol. 28, no. 4, pp. 680-685. 20 Apr 2009. ISSN: 1672-2043	Non-relevant by full text	The article is in Chinese.			
Effect of agricultural chemicals on aquatic ecosystem in Guyana	Adil Ansari, Abdullah; Bibi Waleema, Bacchus	Global Journal of Environmental Research, (2009) Vol. 3, No. 1, pp. 22-25. CODEN: GJERAW. ISSN: 1990-925X.	Non-relevant by full text	Publication is reporting on water monitoring under Non-EU conditions which are not relevant for the environmental risk assessments. Detected residues in algae are considered to be not relevant for the dietary risk assessment as it is neither clear these algal species are suitable for human consumption or ever harvested for human consumption, also residues cannot be attributed to a GAP relevant for EU and might be caused by misuse or accidental spillage unclear exposure.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Assessing the chemical contamination dynamics in a mixed land use stream system	Sonne, Anne Th.; McKnight, Ursula S.; Roende, Vinni; Bjerg, Poul L.	Water Research, (2017) Vol. 125, pp. 141-151. CODEN: WATRAG. ISSN: 0043-1354.	Non-relevant by full text	No glyphosate measurements reported from water monitoring. Some AMPA monitoring but source of AMPA unknown hence not relevant for risk assessment.			
Effects of mechanical and chemical combating Sorghum halepensis (L.) Pers on soil microflora.	Djonova, E.; Kaloyanova, N.; Stoimenova, I.; Subev, V.	Journal of Balkan Ecology (2008) , Volume 11, Number 4, pp. 383-390, 5 refs. ISSN: 1311-0527 Published by: PublishScieSet-Eco URL (Availability): http://www.ecobalk.com	Non-relevant by full text	Findings not related to environmental fate. The effect of glyphosate on the microbial polulation was investigated.			
Effects of tilling no-till soil on losses of atrazine and glyphosate to runoff water under variable intensity simulated rainfall	Warnemuende, E A; Patterson, J P; Smith, D R; Huang, C H	Soil and tillage research (2007) , Volume 95, Number 1-2, pp. 19-26 ISSN: 0167-1987 Source Note: 2007 Sept., v. 95, issue 1-2	Non-relevant by full text	Publication not dealing with Japan/EU representative conditions (i.e. field location). The runoff of glyphosate and atrazine was tested on field plots in the U.S..			
Sources of aminomethylphosphonic acid (AMPA) in urban and rural catchments in Ontario, Canada: Glyphosate or phosphonates in wastewater?	Struger J Van Stempvoort D R; Brown S J	Environmental pollution (Barking, Essex : 1987), (2015 Sep) Vol. 204, pp. 289-97. Electronic Publication Date: 24 May 2015 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Non-relevant by full text	Results of concentration measurements in Canadian urban and rural catchments are not representative for European agricultural practice.			
Macroscopic Evidence of Sources of Particles for Facilitated Transport during Intensive Rain	Styczen, M; Petersen, C T; Koch, C Bender; Gjettermann, B	Vadose zone journal (2011), pp. 1151-1161 ISSN: 1539-1663 Published by: Soil Science Society of America Source Note: 2011 Nov., v. 10, no. 4	Non-relevant by full text	No new experimental data generated, only review & conclusions on results of data from literature.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
New approaches to identification and activity estimation of glyphosate degradation enzymes.	Sviridov A V Zelenkova N F; Vinokurova N G; Ermakova I T; Leontievsky A A	Biochemistry. Biokhimiia, (2011 Jun) Vol. 76, No. 6, pp. 720-5. Journal code: 0376536. E-ISSN: 1608-3040. L-ISSN: 0006-2979.	Non-relevant by full text	experiments on isolated and cultivated bacteria are not relevant to the data requirement			
Distribution of glyphosate and methylphosphonate catabolism systems in soil bacteria Ochrobactrum anthropi and Achromobacter sp.	Sviridov, Alexey V.; Shushkova, Tatyana V.; Zelenkova, Nina F.; Vinokurova, Natalya G.; Morgunov, Igor G.; Ermakova, Inna T.; Leontievsky, Alexey A. (correspondence) Zelenkova, Nina F.; Ermakova, Inna T.; Leontievsky, Alexey A. (correspondence) Leontievsk	Applied Microbiology and Biotechnology, (2011) pp. 1-10. Refs: 36 ISSN: 0175-7598; E-ISSN: 1432-0614 CODEN: AMBIDG	Non-relevant by full text	experiments on isolated and cultivated bacteria are not relevant to the data requirement			
Fate of herbicides and nonylphenol in soil - plant - water systems amended with contaminated sewage sludge	Ghanem, Aline; Dubroca, Jacqueline; Chaplain, Veronique; Mougin, Christian	Environmental Chemistry Letters. Vol. 4, no. 2, pp. 63-67. Jun 2006. ISSN: 1610-3653 E-ISSN: 1610-3661 DOI: 10.1007/s10311-006-0034-5 Published by: Springer-Verlag (Heidelberg), Tiergartenstrasse 17 Heidelberg 69121 Germany	Non-relevant by full text	Study design not relevant for the European regulatory purposes. A mixture of compounds was studied.			
Fate of the herbicides glyphosate, glufosinate-ammonium, phenmedipham, ethofumesate and metamitron in two Finnish arable soils.	Laitinen, Pirkko; Siimes, Katri; Eronen, Liisa; Ramo, Sari; Welling, Leena; Oinonen, Seija; Mattsoff, Leona; Ruohonen-Lehto, Marja.	Pest Manage. Sci., Volume 62, Issue 6, Page 473-491, Publication Year 2006	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Glyphosate (Roundup ready) was sprayed on glyphosate resistant sugar beet instead of bare soil.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Fluctuations in counts of some microorganisms in lake water caused by the herbicide ROUNDUP 360 SL.	Jankowska, J.; Zmysowska, I.	Polish Journal of Natural Sciences (2008) , Volume 23, Number 1, pp. 121-133, 31 refs. ISSN: 1643-9953 DOI: 10.2478/v10020-008-0009-z Published by: Versita, Warsaw URL (Availability): http://versita.com/science/agriculture/pjns/	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. The effect of glyphosate concentration on the counts of bacteria in lake water was investigated. No endpoints for risk assessment are generated.			
A review of rapid transport of pesticides from sloping farmland to surface waters: Processes and mitigation strategies.	Tang, Xiangyu [Reprint Author]; Zhu, Bo; Katou, Hidetaka	JOURNAL OF ENVIRONMENTAL SCIENCES, (2012) Vol. 24, No. 3, pp. 351-361. http://www.journals.elsevier.com/journal-of-environmental-sciences/ . CODEN: JENSEE. ISSN: 1001-0742. E-ISSN: 1878-7320.	Non-relevant by full text	The paper is a review of pesticide transport from sloping farmland to surface water. Glyphosate is not explicitly mentioned.			
Glyphosate behavior at soil and mineral-water interfaces.	Pessagno Romina C; Torres Sanchez Rosa M; Dos Santos Afonso Maria	Environmental pollution (Barking, Essex : 1987), (2008 May) Vol. 153, No. 1, pp. 53-9. Electronic Publication Date: 14 Feb 2008	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Adsorption was tested in solutions with adjusted pH. Isotherms were established according to Langmuir. One soil was previously treated with H2O2 to reduce organic matter content.			
Glyphosate mineralization : effect of temperature and soybean and corn crop residues .	Rampoldi, A.; Hang, S.; Barriuso, E.	Chilean Journal of Agricultural Research (2008) , Volume 68, Number 1, pp. 13-20, 24 refs. ISSN: 0365-2807 Published by: Instituto de Investigaciones Agropecuarias, Chillan URL (Availability): http://www.inia.cl/at/agritec.htm	Non-relevant by full text	Study design not relevant for the European regulatory purposes. The kinetics of mineralization of glyphosate in stubbles of soybean and corn were investigated. No endpoints for risk assessment are generated.			
Glyphosate mobility in soils by phosphate application: Laboratory column experiments.	Zhao, Bingzi; Zhang, Jiabao; Gong, Jiandong; Zhang, Hui; Zhang, Congzhi	Geoderma, (MAR 15 2009) Vol. 149, No. 3-4, pp. 290-297. http://www.journals.elsevier.com/geoderma/#description .	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Adsorption and column experiments were performed with glyphosate. For the adsorption experiments the soil pH was adjusted to pH 3–9. The flow direction of the column experiment was from bottom to top. According to the OECD 312 guideline, artificial rain should be applied to the soil columns and the leachate collected. No endpoints were determined in the study.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate runoff when applied to zoysiagrass under golf course fairway conditions	Starrett, Steven K.; Klein, Jamie	ACS Symposium Series, (2008) Vol. 997, No. Fate of Nutrients and Pesticides in the Urban Environment, pp. 237-253, 1 plate. CODEN: ACSMC8. ISSN: 0097-6156.	Non-relevant by full text	Publication not dealing with Japan/EU representative conditions (i.e. non-EU field location). Publication dealing with a Roundup formulation that is not representative for AIR5. The objectives of the study were: (1) to measure glyphosate runoff from zoysiagrass fairways on a golf course in Kansas (U.S.) following the application of Roundup herbicide, (2) to determine glyphosate runoff concentrations and their resulting effect on the environment, and (3) to provide up-to-date data of research findings on pesticide transport when applied to turfgrass.			
Glyphosate translocation from plants to soil - does this constitute a significant proportion of residues in soil	Laitinen, Pirkko; Raemoe, Sari; Siimes, Katri	Plant and soil (2007) , pp. 51-60 ISSN: 0032-079X Published by: Dordrecht : Springer Netherlands Source Note: 2007 Nov., v. 300, no. 1-2	Non-relevant by full text	Study design not relevant for the European regulatory purposes. Translocation of glyphosate (N-(phosphonomethyl)glycine) to plant roots and its impact on detected herbicide residues in sandy loam soil were studied in a glasshouse pot experiment in Finland. Glyphosate was sprayed on leaves of Quinoa plants.			
Development of sampling for quantification of glyphosate in natural waters.	Tzaskos, D. F.; Marcovicz, C.; Dias, N. M. P.; Rosso, N. D.	Ciencia e Agrotecnologia (2012), Volume 36, Number 4, pp. 399-405, 25 refs. ISSN: 1413-7054 DOI: 10.1590/S1413-70542012000400003 Published by: Universidade Federal de Lavras, Lavras URL (Availability): http://www.scielo.br/scielo.php?script=sci_arttext&p	Non-relevant by full text	Development of an analytical method for water analysis in Brazil is not relevant to the data requirements for environmental fate. The analyses of Brazilian stream water samples from an area with transgenic soy plantations are not representative for European agricultural practice.			
Impact of glyphosate application on microbial biomass and metabolic activity in a Vertic Argiudoll from Argentina.	Gomez, Elena; Ferreras, Laura; Lovotti, Lorena; Fernandez, Estela	European Journal of Soil Biology, (MAR-APR 2009) Vol. 45, No. 2, pp. 163-167. ISSN: 1164-5563.	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. No endpoints for risk assessment are generated. The effect of glyphosate on the soil microbial biomass was investigated.			
Influence of watershed system management on herbicide concentrations in Mississippi Delta oxbow lakes.	Zablotowicz Robert M; Locke Martin A; Krutz L Jason; Lerch Robert N; Lizotte Richard E; Knight Scott S; Gordon R Earl; Steinriede R Wade	The Science of the total environment, (2006 Nov 1) Vol. 370, No. 2-3, pp. 552-60. Electronic Publication: 2006-09-26.	Non-relevant by full text	Publication where glyphosate or a relevant metabolite were not the focus of the publication. Glyphosate was not among the active substances measured in the article.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Glyphosate residues in rural groundwater, Nottawasaga River Watershed, Ontario, Canada.	Van Stempvoort Dale R; Spoelstra John; Brown Susan J; Struger John Spoelstra John; Senger Natalie D Post Ryan	Pest management science, (2016 Oct) Vol. 72, No. 10, pp. 1862-72. Electronic Publication Date: 8 Feb 2016 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Non-relevant by full text	Results of concentration measurements in Canadian shallow rural groundwater are not representative for European agricultural practice.			
Land use and riparian effects on prairie wetland sediment properties and herbicide sorption coefficients.	Xu Dani; Meyer Sheila; Gaultier Jeanette; Farenhorst Annemieke; Pennock Dan	Journal of environmental quality, (2009 Jul-Aug) Vol. 38, No. 4, pp. 1757-65. Electronic Publication Date: 23 Jun 2009	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. Adsorption study performed with sediment of a wetland. Only mean values (5 sampling points and four cores per point) were reported.			
Levels of glyphosate in surface waters, sediments and soils associated with direct sowing soybean cultivation in north pampasic region of Argentina.	Peruzzo Pablo J; Porta Atilio A; Ronco Alicia E	Environmental pollution (Barking, Essex : 1987), (2008 Nov) Vol. 156, No. 1, pp. 61-6. Electronic Publication Date: 4 Mar 2008	Non-relevant by full text	Publication not dealing with Japan/EU conditions (field location in Argentina and a transgenic soybean cultivation area).			
Modelling the Environmental Fate of the Herbicide Glyphosate in Soil Lysimeters	Klier, Christine; Grundmann, Sabine; Gayler, Sebastian; Priesack, Eckart	Water, air and soil pollution. Focus (2008) , Volume 8, Number 2, pp. 187-207 ISSN: 1567-7230 Published by: Dordrecht : Springer Netherlands Source Note: 2008 Apr., v. 8, no. 2	Non-relevant by full text	Not relevant, as the focus is on development of a model and transgenic soybeans play a major role. The TSCF was only calculated by a model and no results is given. Additionally, glyphosate was applied to plants by foliar application (not to bare soil).			
Industrial agriculture and agroecological transition systems: A comparative analysis of productivity results, organic matter and glyphosate in soil	Virginia, Aparicio; Agustin Barbera; Eduardo De Geronimo; Jose Luis Costa; Marisa Domenech; Martin Zamora; Mauricio Castro-Franco	Agricultural systems (2018), pp. 103-112 ISSN: 0308-521X Published by: Elsevier Ltd Source Note: 2018 Nov., v. 167	Non-relevant by full text	Economic and ecological study performed in Argentina. Comparison of industrial agriculture with agro-ecological system. Soil organic matter and glyphosate / AMPA concentrations in soil measured in addition to economic measures.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
The nutritional status of GMOs	Vrain, T C	Acta horticulturae (2016), Number 1124, pp. 97-100 ISSN: 0567-7572 Published by: International Society for Horticultural Science. Source Note: 2016 Oct. 25, , no. 1124	Non-relevant by full text	Limited review and commentary on glyphosate properties in relation to GMO nutritional status.			
A real time in situ ATR-FTIR spectroscopic study of glyphosate desorption from goethite as induced by phosphate adsorption: effect of surface coverage.	Waiman Carolina V Avena Marcelo J; Regazzoni Alberto E; Zanini Graciela P	Journal of colloid and interface science, (2013 Mar 15) Vol. 394, pp. 485-9. Electronic Publication Date: 9 Jan 2013 Journal code: 0043125. E-ISSN: 1095-7103. L-ISSN: 0021-9797.	Non-relevant by full text	Adsorption experiments with isolate minerals (goethite and magnetite) are not relevant to the data requirements			
Pesticide Occurrence and Distribution in the Lower Clackamas River Basin, Oregon, 2000-2005	Carpenter, Kurt D; Sobieszczyk, Steven; Arnsberg, Andrew J; Rinella, Frank A	Scientific Investigations Report. U.S. Geological Survey. no. 2008-5027, 99 pp. 2008. Published by: U.S. Geological Survey URL (Document): http://pubs.usgs.gov/sir/2008/5027/	Non-relevant by full text	Publication not dealing with EU representative uses / conditions (non-EU monitoring).			
Application of least-squares support vector machines for quantitative evaluation of known contaminant in water distribution system using online water quality parameters	Wang, Kexin; Wen, Xiang; Hou, Dibo; Tu, Dezhan; Zhu, Naifu; Huang, Pingjie; Zhang, Guangxin; Zhang, Hongjian	Sensors (2018), 18(4), 938/1-938/19 CODEN: SENS9; ISSN: 1424-8220	Non-relevant by full text	No reference to glyphosate, AMPA, HMPA			
Occurrence of pesticides in groundwater underlying areas of high-density row-crop production in Alabama, 2009-2013	Welch, Heather L.	Scientific Investigations Report (United States Geological Survey) (2015), 2015-5014, 1-44 CODEN: SIRUBS; ISSN: 2328-0328 URL: http://pubs.usgs.gov/sir/2015/5014/pdf/sir2015-5014.pdf	Non-relevant by full text	Groundwater monitoring data from areas of high density row-crop production in the US are not representative for European agricultural practice.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Pesticides in Southwest Florida waterways - A report card.	Hushon, Judith M.	Florida Scientist, (2006) Vol. 69, No. Suppl. 2, pp. 100-116.	Non-relevant by full text	Publications not dealing with EU representative uses / conditions (non-EU monitoring).			
Pesticides in the Rhone river delta (France): Basic data for a field-based exposure assessment .	Comoretto, Laetitia; Arfib, Bruno; Chiron, Serge	Science of the Total Environment, (JUL 15 2007) Vol. 380, No. 1-3, Sp. Iss. SI, pp. 124-132. http://www.journals.elsevier.com/science-of-the-total-environment/#description .	Non-relevant by full text	Publication where glyphosate or a relevant metabolite were not the focus of the publication.			
Phosphate and glyphosate mobility in soil columns amended with roundup	Barrett, Katherine A; Murray B McBride	Soil science (2007) , Volume 172, Number 1, pp. 17-26 ISSN: 0038-075X Published by: Lippincott Williams and Wilkins Source Note: 2007 Jan., v. 172, no. 1	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. It was investigated whether moderately low glyphosate application rates could mobilize significant PO43- in coarse-textured soils. No endpoints for risk assessment are generated.			
Photodegradation of glyphosate in the ferrioxalate system.	Chen Yong; Wu Feng; Lin Yixin; Deng Nansheng; Bazhin Nikolai; Glebov Evgeni	Journal of hazardous materials, (2007 Sep 05) Vol. 148, No. 1-2, pp. 360-5. Electronic Publication Date: 23 Feb 2007	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. Wavelength of the used lamp was > 365 nm and the focus of the article was the photodegradation in a ferrioxalate system.			
QSPR Modeling of Soil Sorption Coefficients (KOC) of Pesticides Using SPA-ANN and SPA-MLR.	Goudarzi, Nasser; Goodarzi, Mohammad; Araujo, Mario Cesar Ugulino; Galvao, Roberto Kawakami Harrop.	J. Agric. Food Chem., Volume 57, Issue 15, Page 7153-7158, Publication Year 2009	Non-relevant by full text	Publication where glyphosate was not the focus of the publication. A QSAR model was developed, glyphosate was among the 124 substances used as input data.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Degradation characteristics of organophosphate-degradation microorganism BR13.	Wu Xiang; Kang JiTing; Gan BingCheng; Peng WeiHong; Wu, X.; Kang, J. T.; Gan, B. C.; Peng, W. H.	Environmental Science & Technology (China) (2011), Volume 34, Number 11, pp. 54-58, 17 refs. ISSN: 1003-6504 Published by: Editorial Board of Environmental Science & Technology, Wuhan URL (Availability): http://fjks.chinajournal.net.cn	Non-relevant by full text	Experiments on degradation of glyphosate by individual micro-organisms isolated from activated sludge are not relevant to the data requirements.			
Researches regarding the microorganisms influence on glyphosate biodegradation	Ersilia, Alexa; Renata, Sumalan; Monica, Negrea	Journal of Agroalimentary Processes and Technologies (2008), 14(2), 498-502	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. No endpoints for risk assessment are generated. The effect of glyphosate on the soil microbial biomass was investigated.			
D151 resin preloaded with Fe(3+) as a salt resistant adsorbent for glyphosate from water in the presence 16% NaCl	Xiao Guqing Meng Qiudong	Ecotoxicology and environmental safety, (2020 Jan 02) Vol. 190, pp. 110140. Electronic Publication Date: 2 Jan 2020 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Non-relevant by full text	Experimental investigation of resins for removal of glyphosate from water. Not relevant for EU risk assessment.			
Simultaneous mineralization of glyphosate and diuron by a consortium of three bacteria as free-and/or immobilized-cells formulations.	Bazot S; Lebeau T	Applied microbiology and biotechnology, (2008 Jan) Vol. 77, No. 6, pp. 1351-8. Electronic Publication Date: 17 Nov 2007	Non-relevant by full text	Study design is not relevant for the European regulatory purposes. Three isolated bacteria strains were assessed to study the simultaneous mineralisation of glyphosate and diuron.			
Effect of light conditions and chemical characteristics of water on dissipation of glyphosate in aqueous medium.	Yadav Veena; Kaur Paawan Kaur Pervinder	Environmental monitoring and assessment, (2017 Nov 06) Vol. 189, No. 12, pp. 613. Electronic Publication Date: 6 Nov 2017 Journal code: 8508350. E-ISSN: 1573-2959. L-ISSN: 0167-6369.	Non-relevant by full text	Non-EU study (India). Used glyphosate formulation to study degradation of glyphosate in distilled water and local water. Not relevant for EU risk assessment.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Short-term transport of glyphosate with erosion in Chinese loess soil--a flume experiment.	Yang Xiaomei Wang Fei Bento Celia P M; Gai Lingtong; Ritsema Coen J Xue Sha van Dam Ruud; Mol Hans Geissen Violette	The Science of the total environment, (2015 Apr 15) Vol. 512-513, pp. 406-414. Electronic Publication Date: 30 Jan 2015 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Non-relevant by full text	Laboratory experiments on run-off with hydraulic flumes are not relevant to EU data requirements.			
Soil column experiments used as a means to assess transport, sorption, and biodegradation of pesticides in groundwater.	Magga Zoi; Tzovolou Dimitra N; Theodoropoulou Maria A; Dalkarani Theodora; Pikios Konstantinos; Tsakiroglou Christos D	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2008 Nov) Vol. 43, No. 8, pp. 732-41.	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. Column leaching was performed with artificial groundwater (not artificial rainwater) and over a period of 6.5 months glyphosate was continuously applied to the column.			
Some aspects of the glyphosate adsorption on montmorillonite and its calcined form. Clay and Health - clays in pharmacy, cosmetics, pelotherapy, and environment protection.	Damonte, M.; Torres Sanchez, R. M.; Afonso, M. Dos S.; Dos S. Afonso, M. Editor(S): Carretero, M. I.; Lagaly, G.; Showalter, M.	Applied Clay Science (2007), Volume 36, Number 1/3, pp. 86-94 ISSN: 0169-1317 DOI: 10.1016/j.clay.2006.04.015 Published by: Elsevier, Amsterdam URL (Availability): http://www.sciencedirect.com/science?_ob=equals+ArticleURL+and+udi+equals+B6V8Y-4M3RNX2-4	Non-relevant by full text	Study design is not relevant for the European regulatory purposes. Adsorption to specific mineral, no relevant endpoints were determined.			
Sorption and microbial degradation of glyphosate in soil suspensions	Shushkova, T V; Vasilieva, G K; Ermakova, I T; Leontievsky, A A	Applied biochemistry and microbiology (2009), pp. 599-603 ISSN: 0003-6838 Published by: Dordrecht : SP MAIK Nauka/Interperiodica Source Note: 2009 Nov., v. 45, no. 6	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. The adsorption of glyphosate was studied after application of a product (Ground Bio) containing the active agent is glyphosate isopropylamine salt. No endpoints for risk assessment are generated.			
Sorption of glyphosate and phosphate by variable-charge tropical soils from Tanzania.	Gimsing, A. L.; Szilas, C.; Borggaard, O. K.	Geoderma, (FEB 15 2007) Vol. 138, No. 1-2, pp. 127-132.	Non-relevant by full text	Study design that is not relevant for the European regulatory purposes and Publication generating endpoints that are not relatable to the EU level risk assessment. Competitive sorption of glyphosate and phosphate was investigated.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Spatial variability of glyphosate mineralization and soil microbial characteristics in two Norwegian sandy loam soils as affected by surface topographical features	Stenrod, M; Charnay, M P; Benoit, P; Eklo, O M	Soil biology and biochemistry (2006) , Volume 38, Number 5, pp. 962-971 ISSN: 0038-0717 Source Note: 2006 May, v. 38, issue 5	Non-relevant by full text	Study design, test system, species tested, exposure routes etc. that are not relevant for the European regulatory purposes. The effect of glyphosate concentration on soil physical and microbial properties was investigated. Furthermore, the mineralization rate of glyphosate was determined in different activity samples. No endpoints for risk assessment are generated.			
The Absence of Glyphosate Residues in Wet Soil and the Adjacent Watercourse after a Forestry Application in New Brunswick.	Adams, G W; Smith, T; Miller, J D	Northern journal of applied forestry (2007) , Volume 24, Number 3, pp. 230-232 ISSN: 0742-6348 Source Note: 2007 Sept., v. 24, no. 3	Non-relevant by full text	Study design is not relevant for the European regulatory purposes and no relevant endpoint was determined. Glyphosate product was applied at a field site in Canada and a water stream and water saturated soil was analysed.			
The effects of glyphosate isopropylamine and trifluralin on the carbon mineralization of olive tree soils . Original Title: Zeytin Topraklarinin Karbon Mineralizasyonuna Glyphosate Isopropylamine ve Trifluralin and apos;in Etkileri.	Eser, Feruze; Sagliker, Huesniye Aka; Darici, Cengiz	Turkish Journal of Agriculture and Forestry, (2007) Vol. 31, No. 5, pp. 297-302. http://journals.tubitak.gov.tr/agriculture/index.php . ISSN: 1300-011X. E-ISSN: 1303-6173.	Non-relevant by full text	Study design and test system that are not relevant for the European regulatory purposes and publications dealing with a Roundup formulation and thus not relevant to the EU glyphosate renewal.			
Photomineralization of Effluent Organic Phosphorus to Orthophosphate under Simulated Light Illumination	Zhang, Xin; Li, Jing; Fan, Wen-Yuan; Sheng, Guo-Ping	Environmental Science & Technology, (2019) Vol. 53, No. 9, pp. 4997-5004. CODEN: ESTHAG. ISSN: 0013-936X.	Non-relevant by full text	Study of photomineralization of Effluent Organic Phosphorus (including glyphosate) to Orthophosphate under Simulated Light Illumination. Not relevant to EU risk assessment.			
Current status of pesticides application and their residue in the water environment in Ireland	ZHAO, Y Q; SINGLETON, P; MEREDITH, S; RENNICK, G W	International journal of environmental studies (2013), Volume 70, Number 1, pp. 59-72 ISSN: 1029-0400 Published by: Routledge Source Note: 2013 Feb. 1, v. 70, no. 1	Non-relevant by full text	Glyphosate use data are the basis on suggesting potential water pollution without presenting any water monitoring data.			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
Urban contributions of glyphosate and its degradate AMPA to streams in the United States.	Kolpin, D. W.; Thurman, E. M.; Lee, E. A.; Meyer, M. T.; Furlong, E. T.; Glassmeyer, S. T.	Science of the Total Environment (2006) , Volume 354, Number 2/3, pp. 191-197, 37 refs. ISSN: 0048-9697 DOI: 10.1016/j.scitotenv.2005.01.028 Published by: Elsevier, Amsterdam URL (Availability): http://www.sciencedirect.com/science?_ob equals ArticleURL a	Non-relevant by full text	Publication not dealing with Japan/European conditions (field location in the United States).	Y		
Water Quality and Evaluation of Pesticides in Lakes in the Ridge Citrus Region of Central Florida	Choquette, Anne F; Kroening, Sharon E	Scientific Investigations Report. U.S. Geological Survey. no. 2008-5178, 55 pp. 2009. Published by: U.S. Geological Survey URL (Document): http://pubs.usgs.gov/sir/2008/5178/	Non-relevant by full text	Publication not dealing with Japan/EU representative uses / conditions (non-EU monitoring).			

Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
A growing threat down on the farm.	Service, Robert F.	Science, (25 May 2007) Vol. 316, No. 5828, pp. 1114-1117. ISSN: 0036-8075; E-ISSN: 1095-9203 CODEN: SCIEAS	Non-relevant by full text	The articles provides an overview about the history and market importance of glyphosate, brief description of a mode of action, first resistance cases, advantages of no-till agriculture, possible replacements/supplements for glyphosate resistant crops.			
Applying Glyphosate Pre-Harvest in Small-Grains	Ransom, Joel	Crop and pest report (2009) , Number 12, pp. 7-8 Source Note: 2009 July 29, issue 12	Non-relevant by full text	The article is an application recommendation/suggestion from the North Dakota State University (NDSU) to the farmers. The glyphosate-note is just a small part of it.			

別添資料 2-1

適合性評価の第 2 段階で「区分 a」「区分 b」「区分 c」へ分類された文献リスト
及びその理由

(ヒトに対する毒性、Toxicology)

区分 a リスト	1～18 頁
区分 b リスト	19～85 頁
区分 c リスト	86～91 頁

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-805380-01-1	Toxicokinetics of glyphosate and its metabolite aminomethyl phosphonic acid in rats .	Anadon A; Martinez-Larranaga M R; Martinez M A; Castellano V J; Martinez M; Martin M T; Nozal M J; Bernal J L	Toxicology letters, (2009 Oct 08) Vol. 190, No. 1, pp. 91-5. Electronic Publication Date: 14 Jul 2009	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.		Y	
M-812291-01-1	An integrated transcriptomic- and proteomic-based approach to evaluate the human skin sensitization potential of glyphosate and its commercial agrochemical formulations.	Lindberg Tim; Zeller Kathrin S; Levander Fredrik de Avila Renato Ivan Eriksson Dennis; Chawade Aakash Lindstedt Malin	Journal of proteomics, (2020 Apr 15) Vol. 217, pp. 103647. Electronic Publication Date: 30 Jan 2020 Journal code: 101475056. E-ISSN: 1876-7737. L-ISSN: 1874-3919.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812260-01-1	Activation of the N-methyl-D-aspartate receptor is involved in glyphosate-induced renal proximal tubule cell apoptosis.	Gao Hui; Ding Fan; Chou Xin; Wu Qing Chen Jing; Zhang Xiaoyan Zhang Xiaoyan Zhang Xiaoyan Wan Yi; Hu Jianying	Journal of applied toxicology : JAT, (2019 Mar 25) . Electronic Publication Date: 25 Mar 2019 Journal code: 8109495. E-ISSN: 1099-1263. L-ISSN: 0260-437X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813449-01-1	Oxidative stress, cholinesterase activity, and DNA damage in the liver, whole blood, and plasma of Wistar rats following a 28-day exposure to glyphosate.	Milic Mirta; Zunec Suzana; Micek Vedran; Kasuba Vilena; Mikolic Anja; Lovakovic Blanka Tariba; Semren Tanja Zivkovic; Pavicic Ivan; Cermak Ana Marija Marjanovic; Pizent Alica; Vrdoljak Ana Lucic; Zeljezic Davor Valencia-Quintana Rafael; Sanchez-Alarcon Ju	Arhiv za higijenu rada i toksikologiju, (2018 Jun 01) Vol. 69, No. 2, pp. 154-168. Journal code: 0373100. E-ISSN: 1848-6312. L-ISSN: 0004-1254.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813432-01-1	Ion Imbalance Is Involved in the Mechanisms of Liver Oxidative Damage in Rats Exposed to Glyphosate.	Tang Juan; Hu Ping; Li Yansen; Li Chunmei Win-Shwe Tin-Tin	Frontiers in physiology, (2017) Vol. 8, pp. 1083. Electronic Publication Date: 19 Dec 2017 Journal code: 101549006. ISSN: 1664-042X. L-ISSN: 1664-042X. Report No.: PMC-PMC5742203.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-765304-01-1	Comparison of transcriptome responses to glyphosate, isoxaflutole, quizalofop-p-ethyl and mesotrione in the HepaRG cell line.	Mesnage Robin; Biserni Martina; Antoniou Michael N Wozniak Eva; Xenakis Theodoros; Mein Charles A	Toxicology reports, (2018) Vol. 5, pp. 819-826. Electronic Publication Date: 11 Aug 2018 Journal code: 101630272. E-ISSN: 2214-7500. L-ISSN: 2214-7500. Report No.: PMC-PMC6098220.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812428-01-1	Glyphosate-rich air samples induce IL-33, TSLP and generate IL-13 dependent airway inflammation	Kumar Sudhir; Kettleson Eric M; Reponen Tiina; Grinshpun Sergey A Khodoun Marat McKnight Christopher Adhikari Atin	Toxicology, (2014 Nov 05) Vol. 325, pp. 42-51. Electronic Publication Date: 27 Aug 2014 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X. Report No.: NLM-NIHMS629285; NLM-PMC4195794; PMC-PMC4195794; MID-NIHMS629285.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.	Y	Y	
M-812288-01-1	Interference of goethite in the effects of glyphosate and Roundup® on ZFL cell line.	da Silva Natara D G Carneiro Cristiane E A; Zaia Dimas A M Campos Estefania V R; de Oliveira Jhones L; Fraceto Leonardo F Risso Wagner E Martinez Claudia B R	Toxicology in vitro : an international journal published in association with BIBRA, (2019 Dec 24) pp. 104755. Electronic Publication Date: 24 Dec 2019 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812485-01-1	Comparative cytotoxicity of plant protection products and their active ingredients	Adler-Flindt, Sarah; Martin, Sabine	Toxicology In Vitro, (2019) Vol. 54, pp. 354-366. CODEN: TIVIEQ. ISSN: 0887-2333.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-769041-01-1	Maximum tolerated doses and erythropoiesis effects in the mouse bone marrow by 79 pesticides' technical materials assessed with the micronucleus assay.	Ilyushina, Nataliya (correspondence); Masaltsev, Gleb; Averianova, Nataliya; Dmitricheva, Olga; Revazova, Yulia; Rakitskii, Valerii Goumenou, Marina Stivaktakis, Polychronis D.; Vardavas, Alexander I.; Tsatsakis, Aristidis M.	Toxicology Reports, (1 Jan 2019) Vol. 6, pp. 105-110. Refs: 22 ISSN: 2214-7500	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812281-01-1	Comparative cyto- and genotoxicity assessment of glyphosate and glyphosate-based herbicides in human peripheral white blood cells.	Nagy Karoly Tessema Roba Argaw; Adam Balazs Budnik Lygia Therese	Environmental research, (2019 Dec) Vol. 179, No. Pt B, pp. 108851. Electronic Publication Date: 21 Oct 2019 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813521-01-1	Moderate levels of glyphosate and its formulations vary in their cytotoxicity and genotoxicity in a whole blood model and in human cell lines with different estrogen receptor status.	de Almeida, L. K. S.; Pletschke, B. I.; Frost, C. L.; de Almeida, L. K. S.	3 Biotech (2018), Volume 8, Number 10, 438 p., 84 refs. ISSN: 2190-572X DOI: 10.1007/s13205-018-1464-z Published by: Springer Berlin, Heidelberg URL (Availability): https://link.springer.com/article/10.1007/s13205-018-1464-z	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813456-01-1	In vitro evaluation of genomic damage induced by glyphosate on human lymphocytes.	Santovito Alfredo; Ruberto Stefano; Gendusa Claudio; Cervella Piero	Environmental science and pollution research international, (2018 Dec) Vol. 25, No. 34, pp. 34693-34700. Electronic Publication Date: 15 Oct 2018 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813307-01-1	Effects of low doses of glyphosate on DNA damage, cell proliferation and oxidative stress in the HepG2 cell line.	Kasuba Vilena; Milic Mirta; Rozgaj Ruzica; Kopjar Nevenka; Mladinic Marin; Zeljezic Davor Mladinic Marin Zunec Suzana; Vrdoljak Ana Lucic Pavicic Ivan; Cermak Ana Marija Marjanovic Pizent Alica; Lovakovic Blanka Tariba	Environmental science and pollution research international, (2017 Aug) Vol. 24, No. 23, pp. 19267-19281. Electronic Publication Date: 30 Jun 2017 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813282-01-1	DNA damage and methylation induced by glyphosate in peripheral blood mononuclear cells (in vitro study)	Kwiatkowska, Marta; BoA14ena Bukowska; Edyta Reszka; Ewa JabAX82oAX84ska; Jaromir MichaAX82owicz; Katarzyna WoA niak	Food and chemical toxicology (2017) ISSN: 0278-6915 Published by: Elsevier Ltd Source Note: 2017,	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813279-01-1	Screening of Pesticides with the Potential of Inducing DSB and Successive Recombinational Repair	Suarez-Larios, Karen ; Salazar-Martinez, Ana-Maria ; Montero-Montoya, Regina	Journal of Toxicology, 20170101 ISSN: 1687-8191; 1687-8191 E-ISSN: 1687-8205; 1687-8205 DOI: 10.1155/2017/3574840 Published by: Hindawi Limited, New York	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812479-01-1	Evaluation of various glyphosate concentrations on DNA damage in human Raji cells and its impact on cytotoxicity.	Townsend Michelle; Peck Connor; Meng Wei; Robison Richard Heaton Matthew O'Neill Kim	Regulatory toxicology and pharmacology : RTP, (2017 Apr) Vol. 85, pp. 79-85. Electronic Publication Date: 6 Feb 2017 Journal code: 8214983. E-ISSN: 1096-0295. L-ISSN: 0273-2300.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812416-01-1	Genotoxicity of mixtures of glyphosate and atrazine and their environmental transformation products before and after photoactivation	Roustan A; Aye M; De Meo M; Di Giorgio C	Chemosphere, (2014 Aug) Vol. 108, pp. 93-100. Electronic Publication Date: 12 Apr 2014 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.	Y	Y	

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813192-01-1	Oxidative stress and comet assay in tissues of mice administered glyphosate and ampa in drinking water for 14 days.	Manas, F.; Peralta, L.; Garcia Ovando, H. Ugnia, L.; Weyers, A.; Gorla, N. Gorla, N.	BAG - Journal of Basic and Applied Genetics, (December 2013) Vol. 24, No. 2, pp. 67-75. Refs: 43 ISSN: 1666-0390 CODEN: BAGABA	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812361-01-1	Cytotoxic and DNA-damaging properties of glyphosate and Roundup in human-derived buccal epithelial cells.	Koller Verena J Furracker Maria; Nersesyan Armen; Misik Miroslav; Eisenbauer Maria; Knasmueller Siegfried	Archives of toxicology, (2012 May) Vol. 86, No. 5, pp. 805-13. Electronic Publication Date: 14 Feb 2012 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.	Y	Y	
M-812295-01-1	Accounting for Multiple Comparisons in Statistical Analysis of the Extensive Bioassay Data on Glyphosate.	Crump Kenny Crouch Edmund Zelterman Daniel Crump Casey Haseman Joseph	Toxicological sciences : an official journal of the Society of Toxicology, (2020 Jun 01) Vol. 175, No. 2, pp. 156-167. Journal code: 9805461. E-ISSN: 1096-0929. L-ISSN: 1096-0929.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813485-01-1	A comprehensive analysis of the animal carcinogenicity data for glyphosate from chronic exposure rodent carcinogenicity studies.	Portier Christopher J	Environmental health : a global access science source, (2020 Feb 12) Vol. 19, No. 1, pp. 18. Electronic Publication Date: 12 Feb 2020 Journal code: 101147645. E-ISSN: 1476-069X. L-ISSN: 1476-069X. Report No.: PMC-PMC7014589.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812283-01-1	Glyphosate affects methylation in the promoter regions of selected tumor suppressors as well as expression of major cell cycle and apoptosis drivers in PBMCs (in vitro study).	Wozniak Ewelina Reszka Edyta; Jablonska Ewa Balcerzyk Aneta Broncel Marlena Bukowska Bozena	Toxicology in vitro : an international journal published in association with BIBRA, (2019 Nov 18) Vol. 63, pp. 104736. Electronic Publication Date: 18 Nov 2019 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812160-01-1	Quizalofop-p-Ethyl Induces Adipogenesis in 3T3-L1 Adipocytes.	Biserni Martina; Mesnage Robin; Ferro Raquel; Antoniou Michael N Wozniak Eva; Xenakis Theodoros; Mein Charles A Wozniak Eva; Xenakis Theodoros; Mein Charles A	Toxicological sciences : an official journal of the Society of Toxicology, (2019 Apr 17) . Electronic Publication Date: 17 Apr 2019 Journal code: 9805461. E-ISSN: 1096-0929. L-ISSN: 1096-0929.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812504-01-1	The Potential Effects of Recall Bias and Selection Bias on the Epidemiological Evidence for the Carcinogenicity of Glyphosate.	Crump Kenny	Risk analysis : an official publication of the Society for Risk Analysis, (2019 Dec 30) . Electronic Publication Date: 30 Dec 2019 Journal code: 8109978. E-ISSN: 1539-6924. L-ISSN: 0272-4332.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813477-01-1	Glyphosate Primes Mammary Cells for Tumorigenesis by Reprogramming the Epigenome in a TET3-Dependent Manner.	Duforestel Manon; Nadaradjane Arulraj; Bougras-Cartron Gwenola; Briand Josephine; Olivier Christophe; Frenel Jean-Sebastien; Vallette Francois M; Cartron Pierre-Francois Duforestel Manon; Nadaradjane Arulraj; Bougras-Cartron Gwenola; Briand Josephine; Oli	Frontiers in genetics, (2019) Vol. 10, pp. 885. Electronic Publication Date: 27 Sep 2019 Journal code: 101560621. ISSN: 1664-8021. L-ISSN: 1664-8021. Report No.: PMC-PMC6777643.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813469-01-1	Glyphosate use and associations with non-Hodgkin lymphoma major histological sub-types: findings from the North American Pooled Project.	Pahwa Manisha Beane Freeman Laura E; Spinelli John J; Blair Aaron; McLaughlin John R; Zahm Shelia Hoar; Cantor Kenneth P; Weisenburger Dennis D; Punam Pahwa Punam Pahwa; Dosman James A; Demers Paul A; Harris Shelley A	Scandinavian journal of work, environment & health, (2019 Jun 27) . Electronic Publication Date: 27 Jun 2019 Journal code: 7511540. E-ISSN: 1795-990X. L-ISSN: 0355-3140.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813471-01-1	Glyphosate induces benign monoclonal gammopathy and promotes multiple myeloma progression in mice.	Wang Lei; Deng Qipan; Hu Hui; Liu Ming; Gong Zhaojian; Zhang Shanshan; Ma Xiaodong; Li Yong Wang Lei Hu Hui; Lu Zhongxin Liu Ming Gong Zhaojian Zhang Shanshan Xu-Monette Zijun Y; Young Ken H Ma Xiaodong Ma Xiaodong	Journal of hematology & oncology, (2019 Jul 05) Vol. 12, No. 1, pp. 70. Electronic Publication Date: 5 Jul 2019 Journal code: 101468937. E-ISSN: 1756-8722. L-ISSN: 1756-8722.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
2018_885014_-S	Glyphosate Use and Cancer Incidence in the Agricultural Health Study	Andreotti, Gabriella; Koutros, Stella; Hofmann, Jonathan N.; Lerro, Catherine C.; Silverman, Debra T.; Freeman, Laura E. Beane (Reprint) Lubin, Jay H. Alavanja, Michael C. Sandler, Dale P.; Parks, Christine G. Lynch, Char	JNCI-JOURNAL OF THE NATIONAL CANCER INSTITUTE, (MAY 2018) Vol. 110, No. 5, pp. 509-516. ISSN: 0027-8874.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813113-01-1	Pesticide exposures and the risk of multiple myeloma in men: An analysis of the North American Pooled Project.	Presutti, Roseanna; Harris, Shelley A. (correspondence); Kachuri, Linda; Pahwa, Manisha Presutti, Roseanna; Harris, Shelley A. (correspondence); Kachuri, Linda; Pahwa, Manisha Harris, Shelley A. (correspondence); Kachuri, Linda; McLaughlin, John R. Harris	International Journal of Cancer, (15 Oct 2016) Vol. 139, No. 8, pp. 1703-1714. Refs: 44 ISSN: 0020-7136; E-ISSN: 1097-0215 CODEN: IJCNW	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813221-01-1	Multiple myeloma and glyphosate use: a re-analysis of US Agricultural Health Study (AHS) data.	Sorahan Tom	International journal of environmental research and public health, (2015 Jan 28) Vol. 12, No. 2, pp. 1548-59. Electronic Publication Date: 28 Jan 2015 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: NLM-PMC4344679; PMC-PMC43446	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.	Y		

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813569-01-1	Low Doses of Glyphosate/Roundup Alter Blood-Testis Barrier Integrity in Juvenile Rats.	Gorga Agostina; Rindone Gustavo Marcelo; Centola Cecilia Lucia; Pellizzari Eliana Herminia; Camberos Maria Del Carmen; Riera Maria Fernanda; Galardo Maria Noel; Meroni Silvina Beatriz Sobarzo Cristian M Marin-Briggiler Clara Isabel; Cohen Debora J	Frontiers in endocrinology, (2021) Vol. 12, pp. 615678. Electronic Publication Date: 11 Mar 2021 Journal code: 101555782. ISSN: 1664-2392. L-ISSN: 1664-2392. Report No.: PMC-PMC7992013.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813522-01-1	Hematological, biochemical, antioxidant and histopathological alterations in kidneys of wistar rat pups exposed to glyphosate herbicide during lactation period.	Refaie, Amel A. Ramadan, Amal (correspondence) Aly, Hanan F.	Current Topics in Pharmacology, (December 2020) Vol. 24, pp. 69-76. Refs: 41 ISSN: 0972-4559	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813581-01-1	Glyphosate exposure attenuates testosterone synthesis via NR1D1 inhibition of STAR expression in mouse Leydig cells.	Zhao Lijia; Zhang Jing; Yang Luda; Zhang Haisen; Zhang Yu; Gao Dengke; Jiang Haizhen; Li Yating; Dong Hao; Ma Tiantian; Wang Xiaoyu Wu Meina Wang Aihua Jin Yaping; Chen Huatao Yuan Yalin	The Science of the total environment, (2021 Apr 25) Vol. 785, pp. 147323. Electronic Publication Date: 25 Apr 2021 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812508-01-1	In vitro effects of glyphosate and Roundup on Sertoli cell physiology.	Gorga Agostina; Rindone Gustavo Marcelo; Centola Cecilia Lucia; Pellizzari Eliana Herminia; Camberos Maria Del Carmen; Cigorraga Selva Beatriz; Riera Maria Fernanda; Galardo Maria Noel Sobarzo Cristian Meroni Silvina Beatriz	Toxicology in vitro : an international journal published in association with BIBRA, (2020 Feb) Vol. 62, pp. 104682. Electronic Publication Date: 15 Oct 2019 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813462-01-1	The Ramazzini Institute 13-week pilot study glyphosate-based herbicides administered at human-equivalent dose to Sprague Dawley rats: effects on development and endocrine system.	Manservigi Fabiana; Panzacchi Simona; Mandrioli Daniele; Falcioni Laura; Bua Luciano; Manservigi Marco; Belpoggi Fiorella Manservigi Fabiana; Spinaci Marcella; Galeati Giovanna Lesseur Corina; Swan Shanna H; Chen Jia Mandrioli Daniele Mantovani Alberto; L	Environmental health : a global access science source, (20190312) Vol. 18, No. 1, pp. 15. Electronic Publication Date: 12 Mar 2019 Journal code: 101147645. E-ISSN: 1476-069X. L-ISSN: 1476-069X. Report No.: PMC-PMC6413565.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812256-01-1	Perinatal Exposure to Glyphosate and a Glyphosate-Based Herbicide Affect Spermatogenesis in Mice.	Pham Thu Ha; Derian Lohann; Kervarrec Christine; Kernanec Pierre-Yves; Jegou Bernard; Smagulova Fatima; Gely-Pernot Aurore	Toxicological sciences : an official journal of the Society of Toxicology, (2019 May 01) Vol. 169, No. 1, pp. 260-271. Journal code: 9805461. E-ISSN: 1096-0929. L-ISSN: 1096-0929.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812274-01-1	Effects of chronic glyphosate exposure to pregnant mice on hepatic lipid metabolism in offspring.	Ren Xin; Dai Pengyuan; Perveen Aneela; Tang Qian; Zhao Liangyu; Jia Xiao; Li Yansen Li Chunmei	Environmental pollution (Barking, Essex : 1987), (2019 Nov) Vol. 254, No. Pt A, pp. 112906. Electronic Publication Date: 20 Jul 2019 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812273-01-1	The toxic effects and possible mechanisms of glyphosate on mouse oocytes.	Zhang Jing-Wen; Xu Ding-Qi Feng Xi-Zeng	Chemosphere, (2019 Dec) Vol. 237, pp. 124435. Electronic Publication Date: 23 Jul 2019 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812245-01-1	Exposure to a glyphosate-based herbicide formulation, but not glyphosate alone, has only minor effects on adult rat testis.	Johansson Hanna Katarina Lilith; Schwartz Camilla Lindgren; Nielsen Lene Norby; Boberg Julie; Vinggaard Anne Marie; Bahl Martin Iain Svingen Terje	Reproductive toxicology (Elmsford, N.Y.), (20181200) Vol. 82, pp. 25-31. Electronic Publication Date: 27 Sep 2018 Journal code: 8803591. E-ISSN: 1873-1708. L-ISSN: 0890-6238.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813319-01-1	The Ramazzini Institute 13-week study on glyphosate-based herbicides at humanequivalent dose in Sprague Dawley rats: study design and first in-life endpoints evaluation	Panzacchi, Simona; Mandrioli, Daniele; Manservigi, Fabiana; Bua, Luciano; Falcioni, Laura; Spinaci, Marcella; Galeati, Giovanna; Dinelli, Giovanni; Miglio, Rossella; et al.	Environmental Health (London, United Kingdom), (2018) Vol. 17, pp. 52/1-52/13. CODEN: EHAGAB. ISSN: 1476-069X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813273-01-1	Evidence for direct effects of glyphosate on ovarian function: glyphosate influences steroidogenesis and proliferation of bovine granulosa but not theca cells in vitro.	Perego Maria Chiara; Schutz Luis F; Spicer Leon J Caloni Francesca; Albonico Marco Cortinovis Cristina	Journal of applied toxicology : JAT, (20170600) Vol. 37, No. 6, pp. 692-698. Electronic Publication Date: 5 Dec 2016 Journal code: 8109495. E-ISSN: 1099-1263. L-ISSN: 0260-437X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813261-01-1	Effect of glyphosate on reproductive organs in male rat.	Dai Pengyuan; Hu Ping; Tang Juan; Li Yansen Li Chunmei	Acta histochemica, (2016 Jun) Vol. 118, No. 5, pp. 519-26. Electronic Publication Date: 7 Jun 2016 Journal code: 0370320. E-ISSN: 1618-0372. L-ISSN: 0065-1281.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812364-01-1	BLTK1 murine Leydig cells: a novel steroidogenic model for evaluating the effects of reproductive and developmental toxicants.	Forgacs Agnes L Ding Qi; Jaremba Rosemary G; Huhtaniemi Ilpo T; Rahman Nafis A; Zacharewski Timothy R	Toxicological sciences : an official journal of the Society of Toxicology, (2012 Jun) Vol. 127, No. 2, pp. 391-402. Electronic Publication Date: 29 Mar 2012 Journal code: 9805461. E-ISSN: 1096-0929. L-ISSN: 1096-0929.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.	Y	Y	

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812301-01-1	Absence of glyphosate-induced effects on ovarian folliculogenesis and steroidogenesis.	Ganesan Shanthi; McGuire Bailey C Keating Aileen F	Reproductive toxicology (Elmsford, N.Y.), (2020 Jun 24) . Electronic Publication Date: 24 Jun 2020 Journal code: 8803591. E-ISSN: 1873-1708. L-ISSN: 0890-6238.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812250-01-1	Effects of glyphosate and aminomethylphosphonic acid on an isogenic model of the human blood-brain barrier.	Martinez Adriana Al-Ahmad Abraham Jacob	Toxicology letters, (2019 Apr) Vol. 304, pp. 39-49. Electronic Publication Date: 31 Dec 2018 Journal code: 7709027. E-ISSN: 1879-3169. L-ISSN: 0378-4274.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812220-01-1	Neurotransmitter changes in rat brain regions following glyphosate exposure	Martinez Maria-Aranzazu; Ares Irma; Rodriguez Jose-Luis; Martinez Marta; Martinez-Larranaga Maria-Rosa; Anadon Arturo	Environmental research, (20180200) Vol. 161, pp. 212-219. Electronic Publication Date: 20 Nov 2017 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812390-01-1	Specific pesticide-dependent increases in α -synuclein levels in human neuroblastoma (SH-SY5Y) and melanoma (SK-MEL-2) cell lines	Chorfa Areski Betemps Dominique; Morignat Eric; Lazizzera Corinne; Hogeveen Kevin; Andrieu Thibault; Baron Thierry	Toxicological sciences : an official journal of the Society of Toxicology, (2013 Jun) Vol. 133, No. 2, pp. 289-97. Electronic Publication Date: 27 Mar 2013 Journal code: 9805461. E-ISSN: 1096-0929. L-ISSN: 1096-0929.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812275-01-1	Roundup-Induced AMPK/mTOR-Mediated Autophagy in Human A549 Cells.	Hao Youwu; Xu Wenping; Zhang Yang; Yang Yun; Tao Liming Gao Jufang	Journal of agricultural and food chemistry, (2019 Oct 16) Vol. 67, No. 41, pp. 11364-11372. Electronic Publication Date: 7 Oct 2019 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812278-01-1	Evaluation of apoptotic potential of glyphosate metabolites and impurities in human peripheral blood mononuclear cells (in vitro study).	Kwiatkowska Marta; Michalowicz Jaromir; Jarosiewicz Pawel; Pingot Daria; Sicinska Paulina; Jarosiewicz Monika; Huras Bogumila; Zakrzewski Jerzy; Bukowska Bozena	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2020 Jan) Vol. 135, pp. 110888. Electronic Publication Date: 17 Oct 2019 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813436-01-1	Environmental Toxin Screening Using Human-Derived 3D Bioengineered Liver and Cardiac Organoids.	Forsythe Steven D; Devarasetty Mahesh; Shupe Thomas; Bishop Colin; Atala Anthony; Soker Shay; Skardal Aleksander; Atala Anthony; Soker Shay; Skardal Aleksander; Soker Shay; Skardal Aleksander; Soker Shay; Skardal Aleksander	Frontiers in public health, (2018) Vol. 6, pp. 103. Electronic Publication Date: 16 Apr 2018 Journal code: 101616579. ISSN: 2296-2565. L-ISSN: 2296-2565. Report No.: PMC-PMC5932352.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812298-01-1	Glyphosate Induces Metaphase II Oocyte Deterioration and Embryo Damage by Zinc Depletion and Overproduction of Reactive Oxygen Species.	Yahfoufi Zeina A; Bai David; Khan Sana N; Chatzicharalampous Charalampos; Kohan-Ghadr Hamid-Reza; Morris Robert T; Abu-Soud Husam M	Toxicology, (2020 Jun) Vol. 439, pp. 152466. Electronic Publication Date: 19 Apr 2020 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813433-01-1	Ignoring Adjuvant Toxicity Falsifies the Safety Profile of Commercial Pesticides	Mesnage, Robin (Reprint); Antoniou, Michael N.	FRONTIERS IN PUBLIC HEALTH, (22 JAN 2018) Vol. 5. ISSN: 2296-2565.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812511-01-1	Herbicides glyphosate and glufosinate ammonium negatively affect human sperm mitochondria respiration efficiency.	Ferramosca, Alessandra; Lorenzetti, Stefano; Di Giacomo, Mariangela; Murrieri, Francesco; Coppola, Lamberto; Zara, Vincenzo	Reproductive Toxicology, (2021) Vol. 99, pp. 48-55. CODEN: REPTED. ISSN: 0890-6238.	Category A, Relevant & reliable or reliable with restrictions articles after detailed	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813437-01-1	Glyphosate affects swine ovarian and adipose stromal cell functions.	Gigante Paolo; Berni Melissa; Bussolati Simona; Grasselli Francesca; Grolli Stefano; Ramoni Roberto Basini Giuseppina	Animal reproduction science, (2018 Aug) Vol. 195, pp. 185-196. Electronic Publication Date: 24 May 2018 Journal code: 7807205. E-ISSN: 1873-2232. L-ISSN: 0378-4320.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812232-01-1	Formulants of glyphosate-based herbicides have more deleterious impact than glyphosate on TM4 Sertoli cells.	Vanlaeys Alison Dubuisson Florine Seralini Gilles-Eric Travert Carine	Toxicology in vitro : an international journal published in association with BIBRA, (2018 Oct) Vol. 52, pp. 14-22. Electronic Publication Date: 5 Jun 2018 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812211-01-1	Evaluation of estrogen receptor alpha activation by glyphosate-based herbicide constituents.	Mesnage Robin; Phedonos Alexia; Biserni Martina Arno Matthew; Balu Sucharitha Corton J Christopher Ugarte Ricardo Antoniou Michael N	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2017 Oct) Vol. 108, No. Pt A, pp. 30-42. Electronic Publication Date: 12 Jul 2017 Journal code: 8207483. E-ISSN: 1873-6351. L-I	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812177-01-1	Glyphosate induces human breast cancer cells growth via estrogen receptors.	Thongprakaisang Siriporn Thiantanawat Apinya; Rangkadilok Nuchanart; Suriyo Tawit; Satayavivad Jutamaad	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2013 Sep) Vol. 59, pp. 129-36. Electronic Publication Date: 10 Jun 2013 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278-	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.		Y	
M-812299-01-1	Glyphosate induces epithelial mesenchymal transition-related changes in human endometrial Ishikawa cells via estrogen receptor pathway.	Gastiazoro M P Durando M; Milesi M M; Lorenz V; Varayoud J Vollmer G Zierau O	Molecular and cellular endocrinology, (2020 Jun 15) Vol. 510, pp. 110841. Electronic Publication Date: 28 Apr 2020 Journal code: 7500844. E-ISSN: 1872-8057. L-ISSN: 0303-7207.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812289-01-1	The endoplasmic reticulum stress and related signal pathway mediated the glyphosate-induced testosterone synthesis inhibition in TM3 cells.	Xia Yongpeng; Lu Jingchun; Xie Qixin Yang Xiaobo Ye Anfang Sun Wenjun	Environmental pollution (Barking, Essex : 1987), (2020 May) Vol. 260, pp. 113949. Electronic Publication Date: 14 Jan 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813582-01-1	Urine biomonitoring of glyphosate in children: Exposure and risk assessment.	Ferreira Catarina; Pereira Andre M P T; Silva Liliana J G; Lino Celeste; Pena Angelina Duarte Sofia C Costa Eduardo Almeida Anabela	Environmental research, (2021 May 07) Vol. 198, pp. 111294. Electronic Publication Date: 7 May 2021 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813371-01-1	Pesticide use and incident Parkinson's disease in a cohort of farmers and their spouses.	Shrestha, Srishti; Parks, Christine G.; Umbach, David M.; Richards-Barber, Marie; Hofmann, Jonathan N.; Chen, Honglei; Blair, Aaron; Beane Freeman, Laura E.; Sandler, Dale P.	Environmental Research, (2020) Vol. 191, pp. 110186. CODEN: ENVRAL. ISSN: 0013-9351.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813448-01-1	Herbicide, fumigant, and fungicide use and breast cancer risk among farmers' wives.	Werder, Emily J.; Sandler, Dale P. (correspondence) Werder, Emily J.; Engel, Lawrence S. Satagopan, Jaya Blair, Aaron; Koutros, Stella; Lerro, Catherine C.; Alavanja, Michael C.; Beane Freeman, Laura E. Sandler, Dale P. (correspondence)	Environmental Epidemiology, (2020) Vol. 4, No. 3. arn. e097. Refs: 49 E-ISSN: 2474-7882	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-806137-01-1	Agricultural pesticide use and pancreatic cancer risk in the Agricultural Health Study Cohort.	Andreotti, Gabriella (Correspondence); Freeman, Laura E. Beane; Coble, Joseph; Silverman, Debra T.; Alavanja, Michael C. R.	International Journal of Cancer, (15 May 2009) Vol. 124, No. 10, pp. 2495-2500. Refs: 25 ISSN: 0020-7136; E-ISSN: 1097-0215 CODEN: IJCNW	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.	Y		
M-806119-01-1	In utero pesticide exposure and childhood morbidity.	Weselak, Mandy; Arbuckle, Tye E.; Wigle, Donald T.; Krewski, Daniel	Environmental Research, (JAN 2007) Vol. 103, No. 1, pp. 79-86.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-805992-01-1	Pesticide exposure as risk factor for non-Hodgkin lymphoma including histopathological subgroup analysis.	Eriksson Mikael; Hardell Lennart; Carlberg Michael; Akerman Mans	International journal of cancer, (2008 Oct 01) Vol. 123, No. 7, pp. 1657-63.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.	Y		
M-806446-01-1	Pesticide use and colorectal cancer risk in the Agricultural Health Study.	Lee, Won Jin; Sandler, Dale P.; Blair, Aaron; Samanic, Claudine; Cross, Amanda J.; Alavanja, Michael C. R.	Int. J. Cancer, Volume 121, Issue 2, Page 339-346, Publication Year 2007	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.	Y		
M-520073-01-1	Pesticides and adult respiratory outcomes in the agricultural health study.	Hoppin, Jane A.; Umbach, David M.; London, Stephanie J.; Lynch, Charles F.; Alavanja, Michael C. R.; Sandler, Dale P.	Ann. N. Y. Acad. Sci., Volume 1076, Issue Living in a Chemical World, Page 343-354, Publication Year 2006	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812240-01-1	Characterising glyphosate exposures among amenity horticulturists using multiple spot urine samples.	Connolly Alison Basinas Ioannis; Galea Karen S Jones Kate; Kenny Laura McGowan Padraic Coggins Marie A	International journal of hygiene and environmental health, (20180800) Vol. 221, No. 7, pp. 1012-1022. Electronic Publication Date: 8 Jul 2018 Journal code: 100898843, E-ISSN: 1618-131X. L-ISSN: 1438-4639.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812246-01-1	Exploring the half-life of glyphosate in human urine samples.	Connolly Alison Jones Kate; Kenny Laura Basinas Ioannis; Galea Karen S McGowan Padraic Coggins Marie A	International journal of hygiene and environmental health, (2019 Mar) Vol. 222, No. 2, pp. 205-210. Electronic Publication Date: 5 Oct 2018 Journal code: 100898843, E-ISSN: 1618-131X. L-ISSN: 1438-4639.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813308-01-1	Exposure assessment using human biomonitoring for glyphosate and fluroxypyr users in amenity horticulture.	Connolly Alison Jones Kate; Kenny Laura Galea Karen S; Basinas Ioannis McGowan Padraic Coggins Marie	International journal of hygiene and environmental health, (20170800) Vol. 220, No. 6, pp. 1064-1073. Electronic Publication Date: 27 Jun 2017 Journal code: 100898843, E-ISSN: 1618-131X. L-ISSN: 1438-4639.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812231-01-1	Glyphosate in Irish adults - A pilot study in 2017.	Connolly Alison Leahy Michelle; Coggins Marie A Jones Kate; Kenny Laura	Environmental research, (20180800) Vol. 165, pp. 235-236. Electronic Publication Date: 3 May 2018 Journal code: 0147621, E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813459-01-1	Evaluating Glyphosate Exposure Routes and Their Contribution to Total Body Burden: A Study Among Amenity Horticulturalists.	Connolly Alison; Coggins Marie A Galea Karen S; Basinas Ioannis Jones Kate; Kenny Laura McGowan Padraic	Annals of work exposures and health, (2019 Feb 16) Vol. 63, No. 2, pp. 133-147. Journal code: 101698454, E-ISSN: 2398-7316. L-ISSN: 2398-7308.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813271-01-1	Glyphosate in German adults - Time trend (2001 to 2015) of human exposure to a widely used herbicide	Conrad Andre Schroter-Kermani Christa; Ruth Maria; Pieper Silvia; Kolossa-Gehring Marike Hoppe Hans-Wolfgang	International journal of hygiene and environmental health, (2017 Jan) Vol. 220, No. 1, pp. 8-16. Electronic Publication Date: 29 Sep 2016 Journal code: 100898843. E-ISSN: 1618-131X. L-ISSN: 1438-4639.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812204-01-1	Glyphosate and Paraquat in Maternal and Fetal Serums in Thai Women.	Kongtip Pornpimol; Nankongnab Noppanun; Phupanchaoensuk Ratanavadee; Palarach Chonlada Sujirarat Dusit Sangprasert Supha Sermuk Malasod Sawattrakool Namthip Woskie Susan Renee	Journal of agromedicine, (2017) Vol. 22, No. 3, pp. 282-289. Journal code: 9421530. E-ISSN: 1545-0813. L-ISSN: 1059-924X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812183-01-1	Glyphosate and aminomethylphosphonic acid are not detectable in human milk.	McGuire Michelle K McGuire Mark A Price William J; Shafii Bahman Carrothers Janae M; Lackey Kimberly A Goldstein Daniel A; Jensen Pamela K; Vicini John L	The American journal of clinical nutrition, (2016 May) Vol. 103, No. 5, pp. 1285-90. Electronic Publication Date: 30 Mar 2016 Journal code: 0376027. E-ISSN: 1938-3207. L-ISSN: 0002-9165.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813337-01-1	Urinary pesticide levels in children and adolescents residing in two agricultural communities in Mexico	Sierra-Diaz, Erick; de Jesus Celis-De la Rosa, Alfredo; Lozano-Kasten, Felipe; Trasande, Leonardo; Peregrina-Lucano, Alejandro Aaron; Sandoval-Pinto, Elena; Gonzalez-Chavez, Humberto	International Journal of Environmental Research and Public Health, (2019) Vol. 16, No. 4, pp. 562. CODEN: IJERGQ. ISSN: 1660-4601.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812155-01-1	Determination of Glyphosate Levels in Breast Milk Samples from Germany by LC-MS/MS and GC-MS/MS.	Steinborn Angelika; Alder Lutz; Michalski Britta Zomer Paul; Mol Hans G J Bendig Paul; Martinez Sandra Aleson; Class Thomas J Pinheiro Nathalie Costa	Journal of agricultural and food chemistry, (2016 Feb 17) Vol. 64, No. 6, pp. 1414-21. Electronic Publication Date: 8 Feb 2016 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812280-01-1	Glyphosate exposures and kidney injury biomarkers in infants and young children.	Trasande Leonardo Aldana Sandra India Trachtman Howard Kannan Kurunthachalam; Karthikraj Rajendiran Morrison Deborah; Messito Mary Jo; Gross Rachel S Christakis Dimitri A; Whitlock Kathryn Sathyanarayana Sheela	Environmental pollution (Barking, Essex : 1987), (2020 Jan) Vol. 256, pp. 113334. Electronic Publication Date: 23 Oct 2019 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813913-01-1	Urine glyphosate level as a quantitative biomarker of oral exposure.	Zoller Otmar Rhyn Peter; Zarn Jurg A; Dudler Vincent	International journal of hygiene and environmental health, (2020 Jul) Vol. 228, pp. 113526. Electronic Publication Date: 16 Apr 2020 Journal code: 100898843. E-ISSN: 1618-131X. L-ISSN: 1438-4639.	Category B, Relevant but supplementary articles after detailed assessment	This was a study with human volunteers. The trial was designed to ensure comparable exposure levels to glyphosate among participants who consumed diets with low content of glyphosate residue during the 4-day trial, except for the single meal with targeted amount of glyphosate and AMPA corresponding to an intake of 196.8 µg of glyphosate and 1.67 µg of AMPA. Only urine was collected and analysed for glyphosate and AMPA. Blood and faeces were not collected and/or analysed. This goal of the study was to estimate oral glyphosate intake using urinary biomonitoring data. However, the authors recognised that the determination of blood concentrations is necessary to improve human bioavailability data. Comparison of urinary data in humans in this study with those measured in the rat studies suggest that the systemic availability is much lower in humans than in rats and could be about 20-fold lower. However, in the absence of a mass balance, and a very low recovery of glyphosate and AMPA, the data should be considered unreliable. Given the knowledge that orally dosed glyphosate is mostly excreted via the faeces, an appropriate study design to address mass balance could easily have been implemented to make this a robust and informative investigation. Low recovery rates of glyphosate and AMPA suggest a very large capacity for errors. The study design is inadequate to confirm reliability of the findings. The lack of mass balance of analytes, despite common knowledge that orally dosed glyphosate is mostly excreted in faeces, is disappointing, given the ease with which a mass balance could have been assessed.			
M-812311-01-1	Human experimental exposure to glyphosate and biomonitoring of young Swedish adults.	Faniband Moosa H; Littorin Margareta; Lindh Christian H Noren Erika	International journal of hygiene and environmental health, (2021 Jan) Vol. 231, pp. 113657. Electronic Publication Date: 30 Oct 2020 Journal code: 100898843. E-ISSN: 1618-131X. L-ISSN: 1438-4639.	Category B, Relevant but supplementary articles after detailed assessment	Article provides only supplementary information on kinetics of glyphosate in human volunteers but not altering risk assessment. No information on the test item and its source or purity. Only one dose level was tested and biomonitoring was restricted to urinary excretion.			
M-813132-01-1	The inhibitory effects of some pesticides on human erythrocyte glucose-6-phosphate dehydrogenase activity (in vitro).	Hopa, E.; Sinan, S.; Turan, Y.	Fresenius Environmental Bulletin (2011), Volume 20, Number 5a, pp. 1314-1319, 24 refs. ISSN: 1018-4619 Published by: Parlar Scientific Publications, Freising URL (Availability): http://www.psp-parlar.de	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate and 2,4 D had been used as test material from a "local pesticide shop". No further identification of the test material had been provided, moreover the study design is not well described.			
M-813351-01-1	Glyphosate surfactant herbicide toxicosis in a dog with hindlimb paresis and urinary incontinence	Lee GaWon; Ro WoongBin; Kang MinHee; Lee, G. W.; Ro, W. B.; Kang, M. H.	Journal of Veterinary Clinics (2018), Volume 35, Number 4, pp. 144-145, 10 refs. ISSN: 1598-298X DOI: 10.17555/jvc.2018.08.35.4.144 Published by: Korean Society of Veterinary Clinics, Seoul URL (Availability): http://www.ksvc.or.kr	Category B, Relevant but supplementary articles after detailed assessment	Acute Pet Exposure which should not impact the re-registration.			
M-812292-01-1	Glyphosate exposure induces inflammatory responses in the small intestine and alters gut microbial composition in rats.	Tang Qian; Tang Juan; Ren Xin Li Chunmei	Environmental pollution (Barking, Essex : 1987), (2020 Jun) Vol. 261, pp. 114129. Electronic Publication Date: 3 Feb 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The rats were gavaged with 0, 5, 50, and 500 mg/kg of body weight glyphosate for 35 continuous days. The different segments of the small intestine were sampled to measure indicators of oxidative stress, ion concentrations and inflammatory responses, and fresh feces were collected for microbiota analysis. The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. No GLP status stated, no HCD provided and no purity of glyphosate stated. Fundamental parameters to understand animal health and toxicology endpoints are not reported. Therefore the context of the study results can not be interpreted with any degree of certainty.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813175-01-1	Evaluation of biochemical, hematological and oxidative parameters in mice exposed to the herbicide glyphosate-Roundup®).	Jasper Raquel Locatelli Gabriel Olivo; Pilati Celso; Locatelli Claudiana	Interdisciplinary toxicology, (2012 Sep) Vol. 5, No. 3, pp. 133-40. Journal code: 101528175. ISSN: 1337-6853. L-ISSN: 1337-6853. Report No.: NLM-PMC3600513; PMC-PMC3600513.	Category B, Relevant but supplementary articles after detailed assessment	Gavaged formulated product, effects not attributable to glyphosate.	Y		
M-813516-01-1	Effects of Sublethal Exposure to a Glyphosate-Based Herbicide Formulation on Metabolic Activities of Different Xenobiotic-Metabolizing Enzymes in Rats.	Larsen Karen; Najle Roberto Larsen Karen; Lifschitz Adrian; Mate Maria L.; Lanusse Carlos; Virkel Guillermo L	International journal of toxicology, (20140700) Vol. 33, No. 4, pp. 307-318. Electronic Publication Date: 1 Jul 2014 Journal code: 9708436. E-ISSN: 1092-874X. L-ISSN: 1091-5818.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested in vivo via drinking water (Roundup FULL II, 662 g/L potassium salt).	Y		
M-813352-01-1	Combined effect of glyphosphate, saccharin and sodium benzoate on rats.	Lieshchova, M. A.; Tishkina, N. M.; Bohomaz, A. A.; Gavrilin, P. M.; Brygadyrenko, V. V.	Regulatory Mechanisms in Biosystems (2018), Volume 9, Number 4, pp. 591-597, many ref. ISSN: 2519-8521 DOI: 10.15421/021888 Published by: Oles Honchar Dnipropetrovsk National University, Dnipropetrovsk URL (Availability): https://medicine.dp.ua/index.php/	Category B, Relevant but supplementary articles after detailed assessment	Substantially lower water consumption in glyphosate only group confounds data and makes endpoint comparisons unmeaningful.			
M-813295-01-1	Morus alba leaf extract mediates neuroprotection against glyphosate-induced toxicity and biochemical alterations in the brain.	Rebai Olfa; Belkhir Manel; Amri Mohamed Boujelben Adnen; Fattouch Sami	Environmental science and pollution research international, (2017 Apr) Vol. 24, No. 10, pp. 9605-9613. Electronic Publication Date: 28 Feb 2017 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	Formulation administered via i.p. injection (described as a commercial formulation registered in the Tunisian Ministry of Agriculture).			
M-813289-01-1	Influence of zinc supplementation on histopathological changes in the stomach, liver, kidney, brain, pancreas and spleen during subchronic exposure of Wistar rats to glyphosate.	Tizhe Emmanuel Vandi; Ibrahim Najume Dogon-Giginya; Fatihi Mohammed Yakasai Onyebuchi Igboke Ikechukwu George Butcher Danladi Jonathan Ambali Suleiman Folorunsho Shallangwa Joshua Mallum	Comparative clinical pathology, (2014) Vol. 23, No. 5, pp. 1535-1543. Electronic Publication Date: 10 Oct 2013 Journal code: 101134362. ISSN: 1618-5641. L-ISSN: 1618-5641. Report No.: PMC-PMC4169648.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested (Bushfire, Monsanto Europe, 360 g/L glyphosate; 441 g/L isopropylamine salt).			
M-813214-01-1	Haematological changes induced by subchronic glyphosate exposure: ameliorative effect of zinc in Wistar rats.	Tizhe, E. V.; Ibrahim, N. D. G.; Fatihi, M. Y.; Igboke, I. O.; George, B. D. J.; Ambali, S. F.; Shallangwa, J. M.	Sokoto Journal of Veterinary Sciences (2013), Volume 11, Number 2, pp. 28-35, 38 refs. ISSN: 1595-093X Published by: Sokoto Journal of Veterinary Sciences, Sokoto URL (Availability): http://www.sokvetjournal.net/	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested in vivo (Bushfire, 441 g/L potassium salt, 360 g/L a.e.).			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813526-01-1	DNA damages of widely used pesticides; a comet assay report for chlorothalonil and glyphosate potassium salt	Celik, Dilek Ascı; Togay, Vehbi Atahan; Turel, Gulcin Yavuz; Tulucoğlu, Eda Evgen; Kosar, Pinar Asian	Fresenius Environmental Bulletin (1 Apr 2021) Volume 30, Number 4 A, pp. 4170-4176, 50 refs. CODEN: FENBEL ISSN: 1018-4619 Published by: Parlar Scientific Publications,	Category B, Relevant but supplementary articles after detailed assessment	The article provides supplementary information on genotoxicity of glyphosate potassium salt demonstrating DNA damage in a comet assay. However, the DNA damage at the mid and high dose is significantly lower than observed at the low dose.			
M-813554-01-1	Monitoring of glyphosate-DNA interaction and synergistic genotoxic effect of glyphosate and 2,4-dichlorophenoxyacetic acid using an electrochemical biosensor.	Congur Gulsah	Environmental pollution (Barking, Essex : 1987), (2021 Feb 15) Vol. 271, pp. 116360. Electronic Publication Date: 19 Dec 2020 Journal code: 8804476, E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The article provides a new in vitro method using electrochemical biosensor to monitor DNA interaction of glyphosate and demonstrates a negative effect onto double stranded DNA. The article is relevant but supplementary for the glyphosate a.s. treatment, however not relevant for the glyphosate formulation tested as it contains ether amine ethoxylate (similar to POEA).			
M-813572-01-1	Glyphosate and AMPA Induce Alterations in Expression of Genes Involved in Chromatin Architecture in Human Peripheral Blood Mononuclear Cells (In Vitro).	Wozniak Ewelina; Michalowicz Jaromir; Bukowska Bozena Wozniak Ewelina Reszka Edyta; Jablonska Ewa Huras Bogumila	International journal of molecular sciences, (2021 Mar 15) Vol. 22, No. 6. Electronic Publication Date: 15 Mar 2021 Journal code: 101092791. E-ISSN: 1422-0067. L-ISSN: 1422-0067. Report No.: PMC-PMC7998550.	Category B, Relevant but supplementary articles after detailed assessment	The article provides new information on the effect of glyphosate and the metabolite AMPA on expression of genes involved in chromatin architecture in human peripheral blood mononuclear cells (PBMCs). The results provide useful information on epigenetic processes that may be relevant but are difficult to interpret without further guidance. Therefore, the results are not expected to alter the existing risk assessment			
M-813199-01-1	Comparison of the in vivo and in vitro genotoxicity of glyphosate isopropylamine salt in three different organisms.	Alvarez-Moya Carlos; Silva Monica Reynoso; Ramirez Carlos Valdez; Gallardo David Gomez Sanchez Rafael Leon Aguirre Alejandro Canales Velasco Alfredo Feria	Genetics and molecular biology, (2014 Mar) Vol. 37, No. 1, pp. 105-10. Electronic Publication Date: 28 Feb 2013 Journal code: 100883590. ISSN: 1415-4757. L-ISSN: 1415-4757. Report No.: NLM-PMC3958316; PMC-PMC3958316.	Category B, Relevant but supplementary articles after detailed assessment	Mechanistic study without clear relevance for the risk assessment.	Y	Y	
M-812477-01-1	Genotoxicity Expert Panel review: weight of evidence evaluation of the genotoxicity of glyphosate, glyphosate-based formulations, and aminomethylphosphonic acid.	Brusick David Aardema Marilyn Kier Larry Kirkland David Williams Gary	Critical reviews in toxicology, (2016 Sep) Vol. 46, No. sup1, pp. 56-74. Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-813110-01-1	Biomonitoring of agricultural workers exposed to pesticide mixtures in Guerrero state, Mexico, with comet assay and micronucleus test	Carbajal-Lopez, Yolanda; Gomez-Arroyo, Sandra; Villalobos-Pietrini, Rafael; Calderon-Segura, Maria Elena; Martinez-Arroyo, Amparo	Environmental Science and Pollution Research, (2016) Vol. 23, No. 3, pp. 2513-2520. CODEN: ESPLEC. ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	No glyphosate specific conclusions, confounded due to multiple pesticide uses.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812450-01-1	Does exposure to glyphosate lead to an increase in the micronuclei frequency? A systematic and meta-analytic review.	de Castilhos Ghisi Nedia; de Oliveira Elton Celton; Prioli Alberto Jose	Chemosphere, (2016 Feb) Vol. 145, pp. 42-54. Electronic Publication Date: 10 Dec 2015 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	No new data presented, only compilation of pooled glyphosate and formulated product meta-analysis.			
M-812435-01-1	Review of genotoxicity biomonitoring studies of glyphosate-based formulations.	Kier Larry D	Critical reviews in toxicology, (2015 Mar) Vol. 45, No. 3, pp. 209-18. Electronic Publication Date: 17 Feb 2015 Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444. Report No.: NLM-PMC4819812; PMC-PMC4819812.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-812389-01-1	Review of genotoxicity studies of glyphosate and glyphosate-based formulations.	Kier Larry D Kirkland David J	Critical reviews in toxicology, (2013 Apr) Vol. 43, No. 4, pp. 283-315. Electronic Publication Date: 12 Mar 2013 Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source	Y	Y	
M-813114-01-1	Micronuclei and other nuclear abnormalities on Caiman latirostris (Broad-snouted caiman) hatchlings after embryonic exposure to different pesticide formulations.	Lopez Gonzalez E C Larriera A Siroski P A Poletta G L	Ecotoxicology and environmental safety, (2017 Feb) Vol. 136, pp. 84-91. Electronic Publication Date: 4 Nov 2016 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Category B, Relevant but supplementary articles after detailed assessment	This study looks at the impact of pesticide formulations on the nuclear developments of Caimen embryos via topical application to their eggs shells after laying. The endpoints achieved cannot be related to EU risk assessment.			Y
M-813135-01-1	Effects of roundup pesticide on the stability of human erythrocyte membranes and micronuclei frequency in bone marrow cells of Swiss mice	Rodrigues, Humberto G.; Penha-Silva, Nilson; Pereira de Araujo, Mariana Ferreira; Nishijo, Hisao; Avers-Ferreira, Tales A.	Open Biology Journal, (2011) Vol. 4, pp. 54-59. CODEN: OBJPDI. ISSN: 1874-1967.	Category B, Relevant but supplementary articles after detailed assessment	Proper substance identification is missing, the study statistically is underpowered, moreover , a mixed study design had been presented where the micronuclei frequency had been investigated in mice after i.p. injection.		Y	
M-813179-01-1	Single-cell gel electrophoresis assay in the ten spotted live-bearer fish, Cnesterodon decemmaculatus (Jenyns, 1842), as bioassay for agrochemical-induced genotoxicity.	Vera-Candiotti Josefina Soloneski Sonia; Larramendy Marcelo L	Ecotoxicology and environmental safety, (2013 Dec) Vol. 98, pp. 368-73. Electronic Publication Date: 5 Sep 2013 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Category B, Relevant but supplementary articles after detailed assessment	GBHs tested on fish		Y	Y
M-812314-01-1	Hazard assessment using an in-silico toxicity assessment of the transformation products of boscalid, pyraclostrobin, fenbuconazole and glyphosate generated by exposure to an advanced oxidative process.	Skane Blake Warriner Keith Prosser Ryan S	Toxicology in vitro : an international journal published in association with BIBRA, (2021 Feb) Vol. 70, pp. 105049. Electronic Publication Date: 7 Nov 2020 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Category B, Relevant but supplementary articles after detailed assessment	Article provides only supplementary information on in silico evaluation of genotoxicity, acute oral toxicity or carcinogenicity but not altering the existing risk assessment. Only one type of software was used for each endpoint. Toxtree was used to address Cramer classification, Ames test, carcinogenicity / mutagenicity, DNA binding and micronucleus assay. Toxicity estimation software tool (TEST) was used to address developmental toxicity and the rat oral LD50. The toxicity evaluation based on single software was considered not robust enough			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813589-01-1	Micronucleus Formation Induced by Glyphosate and Glyphosate-Based Herbicides in Human Peripheral White Blood Cells.	Nagy Karoly; Argaw Tessema Roba; Szasz Istvan; Smeirat Tamara; Al Rajo Alaa; Adam Balazs Argaw Tessema Roba; Szasz Istvan Adam Balazs	Frontiers in public health, (2021) Vol. 9, pp. 639143. Electronic Publication Date: 24 May 2021 Journal code: 101616579. E-ISSN: 2296-2565. L-ISSN: 2296-2565. Report No.: PMC-PMC8180907.	Category B, Relevant but supplementary articles after detailed assessment	The article provides information on the genotoxicity profile of glyphosate. Glyphosate a.s. and 3 GBHs were tested. Roundup Mega containing ethoxylated etheralkylamine), Glyfos containing polyethoxylated tallow amine and Fozat containing a wetting agent C12-14-alkyldimethyl betaine. Glyphosate based formulations that contain POEA (polyethoxylated tallow amine) surfactants or surfactants of similar chemical structure (e.g. ethoxylated etheralkylamine), are generally more toxic than the active substance itself. In addition, the composition of formulations is an important consideration when comparing the endpoints achieved in public literature with those achieved in regulatory studies conducted with either the technical material or studies conducted with the representative formulation MON 52276. Co-formulants may ameliorate or enhance potential effects on test organisms. For example, POEA based surfactants (not permitted for use in Europe) or surfactants with similar structure, may lead to enhanced sensitivity. For this reason and the fact that the formulations tested contain ethoxylated etheralkylamine (similar chemical structure to POEA), POEA and betaine (not present in the AIR5 glyphosate representative formulation), the article is not considered relevant for use in risk assessment for the formulations as the effects observed cannot be attributed to glyphosate a.s. The article nevertheless presents relevance with regard to pure glyphosate.			
M-812297-01-1	Glyphosate and cancer: the importance of the whole picture.	Berry Colin	Pest management science, (2020 Apr 01) . Electronic Publication Date: 1 Apr 2020 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Category B, Relevant but supplementary articles after detailed assessment	The author is providing a general picture of the carcinogenic and genotoxic profile of Glyphosate by commenting the different studies available and the different conclusions made by IARC and Regulatory authorities. There is no evidence in the animals studies to support the IARC conclusion that glyphosate is a probable human carcinogen. The article does not provide any new information.			
M-813367-01-1	Glyphosate influences cell proliferation in vitro.	Jeon, Soyeon; Lee, Sang-Hyeop; Roh, Jaechul; Kim, Jang-Eok; Bunch, Heeyoun [Reprint Author]	Frontiers in Life Science, (2020) Vol. 13, No. 1, pp. 54-65. http://www.tandfonline.com/loi/tfls20 ISSN: 2155-3769. E-ISSN: 2155-3777.	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate was tested in vitro at a range of doses to investigate its effects on cell growth and proliferation in human cells. In conclusion, Glyphosate increases the rate of cell growth in human embryonic kidney 293 (HEK293) cells. Glyphosate promotes cell proliferation by activating gene expression of cell cycle regulators in humans in vitro. Useful information but not altering risk assessment and data requirement and difficult to be used because no HCD. No positive control were used, no statistics methods were described. Furthermore, no OECD guideline followed, no GLP status stated.			
M-812513-01-1	Correcting for Multiple Comparisons in Statistical Analysis of Animal Bioassay Data.	Crump, Kenny [Reprint Author]; Crouch, Edmund; Zelterman, Daniel; Crump, Casey; Haseman, Joseph	Toxicological Sciences, (OCT 2020) Vol. 177, No. 2, pp. 523-524. http://toxsci.oxfordjournals.org/ ISSN: 1096-6080. E-ISSN: 1096-0929.	Category B, Relevant but supplementary articles after detailed assessment	In this letter to Editor Crump et al. (2021) commented on Rusyn et al. (Questioning Existing Cancer Hazard Evaluation Standards in the Name of Statistics. Toxicol Sci. (2020), Vol. 177, Issue 2, pp. 521-522) where Rusyn et al. comments on the original Crump et al. article (Accounting for Multiple Comparisons in Statistical Analysis of the Extensive Bioassay Data on Glyphosate. Toxicol Sci. (2020) Vol. 175, Issue 2, pp. 156-167). The original Crump et al. article was evaluated in the previous search and classified as relevant by full text (Category A and reliable without restrictions). The summary of the article was presented in the dossier under MCA 5.5./026. The appropriateness of the approach presented in the original article has been further reiterated in a Letter to the Editor (Crump K. et al., Toxicological Sciences (2020), Vol. 177, Issue 2, pp. 523-524, Correcting for Multiple Comparisons in Statistical Analysis of Animal Bioassay Data). Crump et al. replied to Rusyn et al. (Questioning existing cancer hazard evaluation standards in the name of statistics. Toxicol Sci. (2020), Vol. 177, Issue 2, pp. 521-522) and explain that the statistical method used in their analysis of the extensive bioassay data on glyphosate provides adequate interpretation of the p-values. They state that before a p-value can be interpreted appropriately, it must be correct, i.e., it must reflect the correct false positive rate for the hypothesis under consideration. The statistical method used in their analysis of the extensive bioassay data on glyphosate provides p-values that correct false positive rates by properly accounting for the multitude of tumours that require analysis by standard statistical methods. As the letter to the editor provides only supplementary information to the original Crump article and does not alter the existing risk assessment, the letter was classified as Category B (relevant but supplementary).			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812196-01-1	Corrigendum to: Glyphosate epidemiology expert panel review: a weight of evidence systematic review of the relationship between glyphosate exposure and non-Hodgkin's lymphoma or multiple myeloma (Critical Reviews in Toxicology, (2016), 46, sup1, (28-43),	Acquavella J. et al.	Critical Reviews in Toxicology, (2018), ISSN: 1040-8444; E-ISSN: 1547-6898 CODEN: CRTXB2	Category B, Relevant but supplementary articles after detailed assessment	Corrigendum to Acquavella_2016.			
M-812501-01-1	Expression of Concern-26 September 2018 An Independent Review of the Carcinogenic Potential of Glyphosate (vol 46, pg 3, 2016)	Anon.	Critical Reviews in Toxicology, (NOV 26 2018) Vol. 48, No. 10, pp. 905. http://www.tandfonline.com/toc/itxc20 /. ISSN: 1040-8444. E-ISSN: 1547-6898.	Category B, Relevant but supplementary articles after detailed assessment	Expression of concern regarding articles Acquavella_2016, Brusick_2016, Williams_2016.			
M-812388-01-1	Plurality of opinion, scientific discourse and pseudoscience: an in depth analysis of the Seralini et al. study claiming that Roundup® Ready corn or the herbicide Roundup® cause cancer in rats.	Arjo Gemma Portero Manuel; Pinol Carme; Vinas Juan; Matias-Guiu Xavier; Capell Teresa; Bartholomaeus Andrew; Parrott Wayne; Christou Paul	Transgenic research, (2013 Apr) Vol. 22, No. 2, pp. 255-67. Electronic Publication Date: 22 Feb 2013 Journal code: 9209120. E-ISSN: 1573-9368. L-ISSN: 0962-8819.	Category B, Relevant but supplementary articles after detailed assessment	Discussion providing context to a controversial retracted publication.			
M-813165-01-1	Final review of the Seralini et al. (2012a) publication on a 2-year rodent feeding study with glyphosate formulations and GM maize NK603 as published online on 19 September 2012 in Food and Chemical Toxicology	Bashir, Saghir; Bergman, Per; Marques, Daniele Court; Paoletti, Claudia; Tiramani, Manuela; Verloo, Didier; Waigmann, Elisabeth	EFSA Journal, (2012) Vol. 10, No. 11, pp. 2986, 10 pp.. CODEN: EJFOA6.	Category B, Relevant but supplementary articles after detailed assessment	EFSA review of Seralini chronic rat study.			
M-813163-01-1	Review of the Seralini et al. (2012) publication on a 2-year rodent feeding study with glyphosate formulations and GM maize NK603 as published online on 19 September 2012 in Food and Chemical Toxicology	Bashir, Saghir; Bergman, Per; Marques, Daniele Court; Paoletti, Claudia; Tiramani, Manuela; Verloo, Didier; Waigmann, Elisabeth; Chesson, Andrew; Mantovani, Alberto	EFSA Journal, (2012) Vol. 10, No. 10, pp. 2910, 9 pp.. CODEN: EJFOA6.	Category B, Relevant but supplementary articles after detailed assessment	EFSA review of Seralini chronic rat study.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813422-01-1	The complexities of regulatory toxicology	Berry, Colin	Outlooks on Pest Management (1 Dec 2018) Volume 29, Number 6, pp. 270-273, 23 refs. ISSN 1743-1026 E-ISSN: 1743-1034 DOI: 10.1564/v29_dec_09 Published by: Research Information Ltd, Grenville Court, Britwell Road, Burnham, Bucks, SL1 8DF (GB)	Category B, Relevant but supplementary articles after detailed assessment	No new data presented.			
M-812400-01-1	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Berry, Colin [Reprint Author]	Food and Chemical Toxicology, (MAR 2013) Vol. 53, pp. 430-431. CODEN: FCTOD7. ISSN: 0278-6915. E-ISSN: 1873-6351.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812195-01-1	Corrigendum to: Genotoxicity Expert Panel review: weight of evidence evaluation of the genotoxicity of glyphosate, glyphosate-based formulations, and aminomethylphosphonic acid (Critical Reviews in Toxicology, (2016), 46, sup1, (56-74), 10.1080/10408444.2	Brusick D. et al.	Critical Reviews in Toxicology, (2018) . ISSN: 1040-8444; E-ISSN: 1547-6898 CODEN: CRTXB2	Category B, Relevant but supplementary articles after detailed assessment	Corrigendum to Brusick_2016.			
M-813410-01-1	Visualizing the heterogeneity of effects in the analysis of associations of multiple myeloma with glyphosate use. comments on sorahan, t. multiple myeloma and glyphosate use: A re-analysis of us agricultural health study (AHS) data. int. j. environ. res. public health 2015, 12, 1548-1559.	Burstyn, Igor (correspondence); De Roos, Anneclaire J.	International Journal of Environmental Research and Public Health, (January 2017) Vol. 14, No. 1. art. 5. Refs: 5 ISSN: 1661-7827; E-ISSN: 1660-4601	Category B, Relevant but supplementary articles after detailed assessment	Reanalysis of old data, no stastically significant glyphosate findings.			
M-812480-01-1	IARC use of oxidative stress as key mode of action characteristic for facilitating cancer classification: Glyphosate case example illustrating a lack of robustness in interpretative implementation.	Bus James S	Regulatory toxicology and pharmacology : RTP, (2017 Jun) Vol. 86, pp. 157-166. Electronic Publication Date: 6 Mar 2017 Journal code: 8214983. E-ISSN: 1096-0295. L-ISSN: 0273-2300.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812399-01-1	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize".	Dung Le Tien [Reprint Author]; Ham Le Huy	Food and Chemical Toxicology, (MAR 2013) Vol. 53, pp. 428-429. CODEN: FCTOD7. ISSN: 0278-6915. E-ISSN: 1873-6351.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812182-01-1	Evaluation of carcinogenic potential of the herbicide glyphosate, drawing on tumor incidence data from fourteen chronic/carcinogenicity rodent studies.	Greim Helmut; Saltmiras David; Mostert Volker; Strupp Christian	Critical reviews in toxicology, (2015 Mar) Vol. 45, No. 3, pp. 185-208. Electronic Publication Date: 26 Feb 2015 Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444. Report No.: NLM-PMC4819582; PMC-PMC4819582.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source	Y		
M-812404-01-1	Comment on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize" by Seralini et al.	Grunewald, Wim; Bury, Jo	Food and Chemical Toxicology, (2013) Vol. 53, pp. 447-448. CODEN: FCTOD7. ISSN: 0278-6915.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812401-01-1	A Comment on "Seralini, G.-E., et al., Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize. Food Chemical Toxicol. (2012)," http://dx.doi.org/10.1016/j.fct.2012.08.005 .	Hammond, Bruce [Reprint Author]; Goldstein, Daniel A.; Saltmiras, David	Food and Chemical Toxicology, (MAR 2013) Vol. 53, pp. 444-449. CODEN: FCTOD7. ISSN: 0278-6915. E-ISSN: 1873-6351.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812371-01-1	Food and chemical toxicology.	Heinemann, Jack A. [Reprint Author]	Food and Chemical Toxicology, (MAR 2013) Vol. 53, pp. 427. CODEN: FCTOD7. ISSN: 0278-6915. E-ISSN: 1873-6351.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812395-01-1	Multiple pesticide exposures and the risk of multiple myeloma	Kachuri, Linda; Demers, Paul A.; Blair, Aaron; Spinelli, John J.; Pahwa, Manisha; McLaughlin, John R.; Pahwa, Punam; Dosman, James A.; Harris, Shelley A.	International Journal of Cancer, (2013) Vol. 133, No. 8, pp. 1846-1858. CODEN: IJCNAB. ISSN: 0020-7136.	Category B, Relevant but supplementary articles after detailed assessment	The relevance of this publication is considered uncertain because it concerns exposure to multiple pesticides and a case control study which is subject to recall bias.	Y		

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812376-01-1	Comments on "Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize"	Le Tien, Dung; Le Huy, Ham	Food and Chemical Toxicology, (2013) Vol. 53, pp. 443-444. CODEN: FCTOD7. ISSN: 0278-6915.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812475-01-1	Evaluating the potential carcinogenic hazard of glyphosate.	McClellan Roger O	Critical reviews in toxicology, (2016 Sep) Vol. 46, No. sup1, pp. 1-2. Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444.	Category B, Relevant but supplementary articles after detailed assessment	Forward by Editor in Chief to a special edition on glyphosate in Critical Reviews in Toxicology.			
M-813290-01-1	Multimomics reveal non-alcoholic fatty liver disease in rats following chronic exposure to an ultra-low dose of Roundup herbicide.	Mesnage Robin; Antoniou Michael N Renney George; Ward Malcolm Seralini Gilles-Eric	Scientific reports, (20170109) Vol. 7, pp. 39328. Electronic Publication Date: 9 Jan 2017 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC5220358.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested (Roundup, composition not described). Livers obtained from research of republished retested Seralini rat study.			
M-812378-01-1	A Comment on "Seralini, G.-E., et al., Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize. Food Chemical Toxicol. (2012)," http://dx.doi.org/10.1016/j.fct.2012.08.005	Ollivier, Louis	Food and Chemical Toxicology, (2013) Vol. 53, pp. 458. CODEN: FCTOD7. ISSN: 0278-6915.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812209-01-1	Re: Tarazona et al. (2017): Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC. doi: 10.1007/s00204-017-1962-5.	Portier Christopher J Clausing Peter	Archives of toxicology, (20170900) Vol. 91, No. 9, pp. 3195-3197. Electronic Publication Date: 15 Jun 2017 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Category B, Relevant but supplementary articles after detailed assessment	letter to editor, ref to Tarazona_2017			
M-813246-01-1	Retracting Inconclusive Research: Lessons from the Seralini GM Maize Feeding Study	Resnik, David B	Journal of agricultural & environmental ethics (2015), Volume 28, Number 4, pp. 621-633 ISSN: 1187-7863 Published by: Springer Netherlands Source Note: 2015 Aug., v. 28, no. 4	Category B, Relevant but supplementary articles after detailed assessment	Discussion on retraction of publications - Seralini case study.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813201-01-1	Non-Hodgkin lymphoma and occupational exposure to agricultural pesticide chemical groups and active ingredients: a systematic review and meta-analysis.	Schinasi Leah; Leon Maria E	International journal of environmental research and public health. (2014 Apr 23) Vol. 11, No. 4, pp. 4449-527. Electronic Publication Date: 23 Apr 2014 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: NLM-PMC4025008; PMC-PMC4025	Category B, Relevant but supplementary articles after detailed assessment	The relevance of this paper is considered uncertain because it concerns a meta-analysis where the results were taken from available studies at face value. The authors had no way to correct for recall bias, confounding, etc. Therefore, the meta-RRs are in error to the extent that the studies included in the meta-analysis are in error.	Y	Y	
M-812397-01-1	Answers to critics: Why there is a long term toxicity due to a Roundup-tolerant genetically modified maize and to a Roundup herbicide	Seralini, Gilles-Eric; Mesnage, Robin; Defarge, Nicolas; Gress, Steeve; Hennequin, Didier; Clair, Emilie; Malatesta, Manuela; de Vendomois, Joel Spiroux	Food and Chemical Toxicology, (2013) Vol. 53, pp. 476-483. CODEN: FCTOD7. ISSN: 0278-6915.	Category B, Relevant but supplementary articles after detailed assessment	Author correspondence responding to multiple letters to the Editor.			
M-812197-01-1	Corrigendum to: Glyphosate in the general population and in applicators: a critical review of studies on exposures (Critical Reviews in Toxicology, (2016), 46, suppl, (21-27), 10.1080/10408444.2016.1214678).	Solomon K.R.	Critical Reviews in Toxicology, (2018) . ISSN: 1040-8444; E-ISSN: 1547-6898 CODEN: CRTXB2	Category B, Relevant but supplementary articles after detailed assessment	Corrigendum to Solomon_2016.			
M-813317-01-1	WHAT IS THE PROBLEM WITH GLYPHOSATE?	Solomon, Keith	Outlooks on Pest Management, Vol. 28, No. 4, pp. 173-174, 20170801 ISSN: 1743-1026 E-ISSN: 1743-1034 DOI: 10.1564/v28_aug_08 Published by: Research Information Ltd., Saffron Walden	Category B, Relevant but supplementary articles after detailed assessment	Review of IARC deficiencies.			
M-813237-01-1	Visualising and thinking and interpreting. Response to the burstyn and de roos comments on sorahan, t. multiple myeloma and glyphosate use: A re-analysis of us agricultural health study (AHS) data. Int. j. environ. res. public health 2015, 12, 1548-1559	Sorahan, Tom	International Journal of Environmental Research and Public Health (1 Jan 2017) Volume 14, Number 1, arn: 6, 3 refs. ISSN 1661-7827 E-ISSN: 1660-4601 DOI: 10.3390/ijerph14010006 Published by: MDPI AG, Postfach, Basel, CH-4005 (CH)	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813276-01-1	Some organophosphate insecticides and herbicides	Stipicevic, Sanja	Arhiv Za Higijenu Rada i Toksikologiju, Vol. 68, No. 2, pp. A10-A11, 20170401 ISSN: 0004-1254 Published by: Institute for Medical Research and Occupational Health, Zagreb	Category B, Relevant but supplementary articles after detailed assessment	Commentary on IARC evaluation.			
M-812202-01-1	Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC.	Tarazona Jose V; Court-Marques Daniele; Tiramani Manuela; Reich Hermine; Istace Frederique; Crivellente Federica Pfeil Rudolf	Archives of toxicology, (2017 Aug) Vol. 91, No. 8, pp. 2723-2743. Electronic Publication Date: 3 Apr 2017 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761. Report No.: PMC-PMC5515989.	Category B, Relevant but supplementary articles after detailed assessment	Comparison of EU regulatory review with IARC evaluation.			
M-812212-01-1	Response to the reply by C. J. Portier and P. Clausen, concerning our review "Glyphosate toxicity and carcinogenicity: a review of the scientific basis of the European Union assessment and its differences with IARC".	Tarazona Jose V; Court-Marques Daniele; Tiramani Manuela; Reich Hermine; Istace Frederique; Crivellente Federica Pfeil Rudolf	Archives of toxicology, (20170900) Vol. 91, No. 9, pp. 3199-3203. Electronic Publication Date: 25 Jul 2017 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Category B, Relevant but supplementary articles after detailed assessment	letter to editor, ref to Tarazona_2017			
M-813264-01-1	On the International Agency for Research on Cancer classification of glyphosate as a probable human carcinogen	Tarone Robert E	European journal of cancer prevention : the official journal of the European Cancer Prevention Organisation (ECP), (20180100) Vol. 27, No. 1, pp. 82-87. Journal code: 9300837. E-ISSN: 1473-5709. L-ISSN: 0959-8278.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-812402-01-1	Serious inadequacies regarding the pathology data presented in the paper by Seralini et al. (2012).	Tribe, David [Reprint Author]	Food and Chemical Toxicology, (MAR 2013) Vol. 53, pp. 452-457. CODEN: FCTOD7. ISSN: 0278-6915. E-ISSN: 1873-6351.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812192-01-1	Glyphosate rodent carcinogenicity bioassay expert panel review.	Williams Gary M Berry Colin Burns Michele de Camargo Joao Lauro Viana Greim Helmut	Critical reviews in toxicology, (2016 Sep) Vol. 46, No. sup1, pp. 44-55. Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812481-01-1	Corrigendum to: Glyphosate rodent carcinogenicity bioassay expert panel review (Critical Reviews in Toxicology, (2016), 46, sup1, (44-55), 10.1080/10408444.2016.1214679)	Williams, G. M., Berry, C., Burns, M. M., de Camargo, J. L. V., & Greim, H. A	Critical Reviews in Toxicology (26 Nov 2018) Volume 48, Number 10, pp. 914 CODEN: CRTXB2 ISSN: 1040-8444 E-ISSN: 1547-6898 DOI: 10.1080/10408444.2018.1522784 Published by: Taylor and Francis Ltd,	Category B, Relevant but supplementary articles after detailed assessment	Corrigendum to article Williams_2016			
M-812502-01-1	A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment (vol 46, pg 3, 2016).	Williams, G. M.; Aardema, M.; Acquavella, J.; Berry, C.; Brusick, D.; Burns, M. M.; de Camargo, J. L. V.; Garabrant, D.; Greim, H. A.; Kier, L. D.; Kirkland, D. J.; Marsh, G.; Solomon, K. R.; Sorahan, T.; Roberts, A.; Weed, D. L.	Critical Reviews in Toxicology, (NOV 26 2018) Vol. 48, No. 10, pp. 907-908. http://www.tandfonline.com/toc/itxc2018 ISSN: 1040-8444. E-ISSN: 1547-6898.	Category B, Relevant but supplementary articles after detailed assessment	Corrigendum to article Williams_2013			
M-812293-01-1	Pre- and postnatal exposure to glyphosate-based herbicide causes behavioral and cognitive impairments in adult mice: evidence of cortical ad hippocampal dysfunction.	Ait-Bali Yassine; Ba-M'hamed Saadia; Bennis Mohamed Ait-Bali Yassine; Sassoe-Pognetto Marco; Giustetto Maurizio Gambarotta Giovanna Sassoe-Pognetto Marco; Giustetto Maurizio	Archives of toxicology, (20200500) Vol. 94, No. 5, pp. 1703-1723. Electronic Publication Date: 17 Feb 2020 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Category B, Relevant but supplementary articles after detailed assessment	In vivo study on pre and post natal effects of Roundup on swiss mice at 2 different doses only, no OECD guideline followed, no GLP status stated, no HCD provided. Oral gavage dosing of formulated product is not relevant to real life exposure scenarios. Environmental fate and metabolism for glyphosate active ingredient versus surfactants are different, and oral co-exposures to mammals at the excessively high doses tested in this case are considered irrelevant to human health risk assessment. In addition, insufficient information is provided to determine which formulation was tested and whether it is the glyphosate EU representative formulation.			
M-813488-01-1	Low-dose Roundup induces developmental toxicity in bovine preimplantation embryos in vitro.	Cai Wenyang; Yang Xiao; Yu Mingxi; Ma Shiliang; Tang Shuang Li Xiangchen Li Hongtu Wang Shuo; Wu Zhengchao	Environmental science and pollution research international, (2020 May) Vol. 27, No. 14, pp. 16451-16459. Electronic Publication Date: 2 Mar 2020 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	The effects of Roundup at 3 doses was investigated on the bovine preimplantation embryo. Direct dosing of formulated product to fertilized embryos in vitro, is not relevant to real life exposure scenarios. Environmental fate, metabolism and pharmacokinetics for glyphosate active ingredient versus surfactants are very different, and oral co-exposures to mammals at the excessively high doses tested in this case are considered irrelevant to livestock and human health risk assessments. In addition, insufficient information is provided to determine which formulation was tested and whether it is the glyphosate EU representative formulation. No OECD guideline followed, no GLP status stated, no HCD provided and no positive control.			
M-813560-01-1	Growth performance and reproductive function impairment of glyphosate-based herbicide in male guinea pig (Cavia porcellus).	Mutwedu Valence Bwana; Azine Pascaline Ciza; Chiregereza Daniel Katulanya; Mugumaarhahama Yannick; Ayagirwe Rodrigue Basengere Balthazar Nyongesa Albert Wafula Ngoumtso Victor Herman	Veterinary medicine and science, (2021 Feb 08) . Electronic Publication Date: 8 Feb 2021 Journal code: 101678837. E-ISSN: 2053-1095. L-ISSN: 2053-1095.	Category B, Relevant but supplementary articles after detailed assessment	The article presents the effects of a glyphosate-based formulation on growth performance and reproductive function impairment in male guinea pigs, which is not the typical animal model of choice for this type of investigation. This study provides interesting information on reproductive functions but the guinea pig is not a model validated for assessing reproductive toxicity in the EU evaluations.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813533-01-1	Teratogenic effect of chlorpyrifos and glyphosate on pregnant rats: biochemical and morphological evaluations	Upadhyay, Jyoti; Rana, Mahendra; Tiwari, Nidhi; Ansari, Mohd Nazam	Journal of Pharmaceutical Research International, (2020) Vol. 32, No. 23, pp. JPRI.61413. CODEN: JPRIBA. ISSN: 2456-9119.	Category B, Relevant but supplementary articles after detailed assessment	The article provides information on teratogenic effects of glyphosate-based formulation Topper 77 (Crystal Crop Protection Pvt. Ltd India) which is nowhere close to the glyphosate representative EU formulation for AIR5. According to the webpage (https://www.crystalcropprotection.com/internationalsales/detail/Topper) it contains 71% of glyphosate and it is a SG-formulation. The representative glyphosate formulation for the AIR5 is a SL formulation and contains 360 g a.s./L. Due to formulation tested, the article is classified as relevant but supplementary.			
M-813124-01-1	Teratological effects induced by three pesticides in pregnant rats	Abou-Amer, Waleed L.; Ali, Fouad A.; Rady, Mohamed I.; El Abdelmonem, Abdalla	Alexandria Journal of Pharmaceutical Sciences, (2010) Vol. 24, No. 1, pp. 21-26. CODEN: AJPSES. ISSN: 1110-1792.	Category B, Relevant but supplementary articles after detailed assessment	Supportive only: study is done with pesticide formulations with only one dose per pesticide treatment group established.			
M-812373-01-1	LETTER TO THE EDITOR: TOXICITY OF ROUNDUP AND GLYPHOSATE.	Belle, R. [Reprint Author]; Marc, J.; Morales, J.; Cormier, P.; Mulner-Lorillon, O.	Journal of Toxicology and Environmental Health Part B Critical Reviews, (2012) Vol. 15, No. 4, pp. 233-235. http://www.tandfonline.com/loi/uteb20 . ISSN: 1093-7404. E-ISSN: 1521-6950.	Category B, Relevant but supplementary articles after detailed assessment	Response to Letter to Editor			
M-813418-01-1	Effects of glyphosate exposure on sperm concentration in rodents: A systematic review and meta-analysis.	Cai Wenyan; Song Xianping; Ji Ying; Guo Haoran; Han Lei; Liu Xin; Zhang Hengdong; Zhang Feng; Zhu Baoli; Xu Ming	Environmental toxicology and pharmacology, (2017 Oct) Vol. 55, pp. 148-155. Electronic Publication Date: 29 Jul 2017 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Category B, Relevant but supplementary articles after detailed assessment	Reevaluation of pooled literature data.			
M-813292-01-1	Effects of melatonin in rats in the initial third stage of pregnancy exposed to sub-lethal doses of herbicides.	de Almeida Lecio Leone; Teixeira Alvaro Aguiar Coelho; Soares Anisio Francisco; Silva Valdemiro Amaro da Junior; Wanderley-Teixeira Valeria Cunha Franklin Magliano da Viciira Filho Leucio Duarte	Acta histochemica, (2017 Apr) Vol. 119, No. 3, pp. 220-227. Electronic Publication Date: 13 Feb 2017 Journal code: 0370320. E-ISSN: 1618-0372. L-ISSN: 0065-1281.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested at high doses of 500 mg/kg bw/day (Roundup).			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812403-01-1	LETTER TO THE EDITOR: DEVELOPMENTAL AND REPRODUCTIVE OUTCOMES OF ROUNDUP AND GLYPHOSATE IN HUMANS AND ANIMALS.	Defarge, N.; Mesnage, R.; Gress, S.; Seralini, G. -E. [Reprint Author]	Journal of Toxicology and Environmental Health Part B Critical Reviews, (2012) Vol. 15, No. 7, pp. 433-437. http://www.tandfonline.com/loi/uteb20 . ISSN: 1093-7404. E-ISSN: 1521-6950.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812374-01-1	LETTER TO THE EDITOR: TOXICITY OF ROUNDUP AND GLYPHOSATE RESPONSE.	DeSesso, John M. [Reprint Author]; Watson, Rebecca E.; Williams, Amy Lavin	Journal of Toxicology and Environmental Health Part B Critical Reviews, (2012) Vol. 15, No. 4, pp. 236-237. http://www.tandfonline.com/loi/uteb20 . ISSN: 1093-7404. E-ISSN: 1521-6950.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812380-01-1	Comment on "Glyphosate impairs male offspring reproductive development by disrupting gonadotropin expression" by Romano et al. 2012.	DeSesso, John M. [Reprint Author]; Williams, Amy L.	Archives of Toxicology, (NOV 2012) Vol. 86, No. 11, pp. 1791-1793. http://www.springerlink.com/content/100462/ . CODEN: ARTODN. ISSN: 0340-5761. E-ISSN: 1432-0738.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812181-01-1	RESPONSE TO THE COMMENTS OF DEFARGE AND COLLEAGUES.	DeSesso, John M.; Watson, Rebecca E.; Williams, Amy L.	Journal of Toxicology and Environmental Health Part B Critical Reviews, (2012) Vol. 15, No. 7, pp. 438-440. http://www.tandfonline.com/loi/uteb20 . ISSN: 1093-7404. E-ISSN: 1521-6950.	Category B, Relevant but supplementary articles after detailed assessment	Response to authors comments on Letter to Editor.			
M-813158-01-1	Effect of agropesticides use on male reproductive function: A study on farmers in Djutitsa (Cameroon)	Manfo, Faustin Pascal Tsague; Moundipa, Paul Fewou; Dechaud, Henri; Tchana, Ang'le Nkouatchoua; Nantia, Edouard Akono; Zobot, Marie-Therese; Pugeat, Michel	Environmental Toxicology, (2012) Vol. 27, No. 7, pp. 423-432. CODEN: ETOXFH. ISSN: 1520-4081.	Category B, Relevant but supplementary articles after detailed assessment	No glyphosate specific conclusions, confounded due to multiple pesticide uses.			
M-813303-01-1	Reproductive toxicity of Roundup herbicide exposure in male albino rat.	Owagboriaye Folarin O Dedeeke Gabriel A; Ademolu Kehinde O; Adeyinka Aladesida A Olujimi Olarenwaju O Ashidi Joseph S	Experimental and toxicologic pathology : official journal of the Gesellschaft fur Toxikologische Pathologie, (2017 Sep 05) Vol. 69, No. 7, pp. 461-468. Electronic Publication Date: 2 May 2017 Journal code: 9208920. E-ISSN: 1618-1433. L-ISSN: 0940-2993.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested in vivo (Roundup 441 g/L potassium salt, 360 g/L a.e.)			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813331-01-1	Effects of glyphosate on sperm parameters and pregnancy success rate in Wistar rats.	Sakpa, C. L.; Popoola, S. O.	Annals of Biomedical Sciences (2018), Volume 17, Number 2, pp. 156-164 ISSN: 1596-6569 Published by: Department of Haematology, University of Benin Teaching Hospital, Benin URL (Availability): https://www.ajol.info/index.php/abs/article/view/17_5604	Category B, Relevant but supplementary articles after detailed assessment	The glyphosate used is not sufficiently characterized, only two dose levels were tested and the number of animals used per dose level was too low.			
M-812359-01-1	Developmental and reproductive outcomes in humans and animals after glyphosate exposure: a critical analysis.	Williams Amy Lavin Watson Rebecca E; DeSesso John M	Journal of toxicology and environmental health. Part B, Critical reviews, (2012) Vol. 15, No. 1, pp. 39-96. Journal code: 9802627. E-ISSN: 1521-6950. L-ISSN: 1093-7404.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-813612-01-1	Perinatal exposure to a glyphosate-based herbicide causes dysregulation of dynorphins and an increase of neural precursor cells in the brain of adult male rats.	Cattani Daiane Struyf Nona; Steffensen Vivien; Brittebo Eva; Andersson Malin Bergquist Jonas Zamoner Ariane	Toxicology, (2021 Aug 30) pp. 152922. Electronic Publication Date: 30 Aug 2021 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Category B, Relevant but supplementary articles after detailed assessment	The article provides supplementary information on the effect of a glyphosate formulation on neurodevelopmental processes associated to long-term brain changes.			
M-812303-01-1	Perinatal exposure to glyphosate or a glyphosate-based formulation disrupts hormonal and uterine milieu during the receptive state in rats.	Lorenz Virginia; Pacini Guillermina Luque Enrique H; Varayoud Jorgelina Milesi Maria M	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2020 Sep) Vol. 143, pp. 111560. Electronic Publication Date: 5 Jul 2020 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278-6915.	Category B, Relevant but supplementary articles after detailed assessment	The article is not reliable for the following reason: The study does not follow any OECD testing guideline, therefore the experimental design and procedures should be not only explained but validated against appropriate reference substances and the interpretation of the results should be supported by adequate historical control data that allow the correct interpretation of the relevance of a change. This is particularly true when assessing the biological relevance of hormonal changes and/or the assessed gene expression. In this publication such data are not provided. It is not clear why only 9 F1 females/group were selected to assess the effects on the pre-implantation phase and not a higher number to cover the basal hormonal variations observed, which should be high based on the scattered values observed in the control group of this study. The authors claim that there was an imbalance in the serum levels of estradiol 2 in relation to progesterone, but the progesterone values were apparently not impacted. Similarly, they claim that glyphosate induced significantly the ERα expression at protein level subepithelial stroma of the uteri (which was not observed in other parts of the uterus), although no changes were observed in ERα mRNA expression but do not take into consideration the inconsistency of their results. Similarly, they concluded that glyphosate provoked aberrant expression on implantation-genes although a consistent response was not observed among all the tested genes. The reproductive performance data of F1 females is not reported in a transparent way: only selected photos of the uterus are presented to indicate that there was a decrease in the number of implantation sites. However, the actual number of the implantation sites per animals are not reported. Similarly the number of corpora lutea, resorption sites and preimplantation loss are represented in graphics (figure 2A, B and C), but the actual number have not been given. So, the authors do not provide the reader of an objective information to understand whether an effect did occur. Overall, this publication presents several deficiencies and bias in reporting the results of their investigations			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812510-01-1	Correction to: Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats (Correction to Archives of Toxicology (2019) 93:3635–3638).	Milesi, Maria M. [Reprint Author]; Lorenz, Virginia; Beldomenico, Pablo M.; Vaira, Stella; Varayoud, Jorgelina; Luque, Enrique H.	Archives of Toxicology, (AUG 2020) Vol. 94, No. 8. http://www.springerlink.com/content/100462/ . CODEN: ARTODN. ISSN: 0340-5761. E-ISSN: 1432-0738.	Category B, Relevant but supplementary articles after detailed assessment	This is a serie of comments and corrections connected to the article by Milesi et al. Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Published in Arch Toxicol. (2018), Vol. 92, No. 8, pp. 2629-2643. This article was evaluated in the previous search and classified as relevant by full text - Category B. In order to reflect the category of the main article, the correction was also classified as Category B. The correction corrects Table 1 of the publication, which lists factors associated with the pre-implantation loss rate and factors associated with fetoplacental parameters of F2 offspring in control and glyphosate-based herbicide-treated female rats. The series contains e.g. following articles, comments and corrections: Milesi et al., Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2018);92(8):2629-2643. Plewis, Comment on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2019);93(1):207. Milesi et al., Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2019);93(12):3635-3638. Paumgarten, Comment on Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats, Arch Toxicol 92:2629-2643 : On the impairment of female reproductive performance by developmental exposure to a glyphosate-based herbicide. Arch Toxicol. (2019);93(3):831-832. Plewis, Comment on response from Milesi et al. to Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2020);94(1):351-352. Milesi et al., Correction to: Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats. Arch Toxicol. (2020);94(8):2897-2898.			
M-812237-01-1	Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Milesi Maria M; Lorenz Virginia; Pacini Guillermina; Varayoud Jorgelina; Luque Enrique H Repetti Maria R; Demonte Luisina D	Archives of toxicology, (20180800) Vol. 92, No. 8, pp. 2629-2643. Electronic Publication Date: 9 Jun 2018 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Category B, Relevant but supplementary articles after detailed assessment	GBH (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats			
M-812282-01-1	Response to comments on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Milesi Maria M; Lorenz Virginia; Varayoud Jorgelina; Luque Enrique H Beldomenico Pablo M Vaira Stella	Archives of toxicology, (2019 Dec) Vol. 93, No. 12, pp. 3635-3638. Electronic Publication Date: 13 Nov 2019 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Category B, Relevant but supplementary articles after detailed assessment	GBH (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.			
M-812247-01-1	Comment on: Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats.	Plewis Ian	Archives of toxicology, (2019 Jan) Vol. 93, No. 1, pp. 207. Electronic Publication Date: 19 Nov 2018 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761. Report No.: PMC-PMC6342875.	Category B, Relevant but supplementary articles after detailed assessment	GBH (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812287-01-1	Comment on response from Milesi et al. to 'Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats'.	Plewis Ian	Archives of toxicology, (2019 Dec 18) . Electronic Publication Date: 18 Dec 2019 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Category B, Relevant but supplementary articles after detailed assessment	GBH (54% glyphosate acid equivalents as the K salt) dosed to pregnant rats.			
M-813454-01-1	DNA and liver damage induced by glyphosate herbicide in suckling pups of wistar rat.	Refaie, Amel A. Ramadan, Amal (correspondence) Aly, Hanan F.; Arafa, Azza F.	Current Topics in Toxicology, (2020) Vol. 16, pp. 205-214. Refs: 38 ISSN: 0972-8228	Category B, Relevant but supplementary articles after detailed assessment	Storage conditions of test item not reported. Animal strain not further specified and age of dams not reported. No analysis of test item in solvent performed. Insufficient number of animals/group tested. It should be noted that the experimental unit for such an experimental design is the litter, not the individual pups. Therefore, statistical evaluations should have been conducted to compare across litters, where n = 2, affording only one degree of freedom for statistical comparisons.			
M-812176-01-1	Evaluation of developmental toxicity studies of glyphosate with attention to cardiovascular development.	Kimmel Gary L Kimmel Carole A; Williams Amy L; DeSesso John M	Critical reviews in toxicology, (2013 Feb) Vol. 43, No. 2, pp. 79-95. Electronic Publication Date: 4 Jan 2013 Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444. Report No.: NLM-PMC3581053; PMC-PMC3581053.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-812294-01-1	Glyphosate-based herbicide impairs energy metabolism and increases autophagy in C6 astrogloma cell line.	Neto da Silva Katriane; Garbin Cappellaro Laura; Ueda Caroline Naomi; Rodrigues Luana; Glaser Viviane Pertile Remor Aline Martins Roberta de Paula Latini Alexandra	Journal of toxicology and environmental health. Part A, (2020 Feb 16) Vol. 83, No. 4, pp. 153-167. Electronic Publication Date: 21 Feb 2020 Journal code: 100960995. ISSN: 1528-7394. L-ISSN: 0098-4108.	Category B, Relevant but supplementary articles after detailed assessment	In vitro study on the effects of micromolar concentrations of a glyphosate-based herbicide on energy metabolism and mitochondrial mass in astrogloma cell line exposed for 24 h to the herbicide at 3 concentrations below 160 µM. However, insufficient information provided to identify which formulation was tested. No positive control was used, no statistics methods were described, no OECD guideline followed, no GLP status stated, no HCD provided. In addition, astrocytes in real life are not co-exposed to the combination of glyphosate + surfactant formulants, based on their very different environmental fates and pharmaco-kinetics. No positive control was used, no statistics methods were described, no OECD guideline followed, no GLP status stated, no HCD provided.			
M-812307-01-1	Exposure to glyphosate during pregnancy induces neurobehavioral alterations and downregulation of Wnt5a-CaMKII pathway.	Coullery Romina; Pacchioni Alejandra M Rosso Silvana B	Reproductive toxicology (Elmsford, N.Y.), (2020 Aug 14) Vol. 96, pp. 390-398. Electronic Publication Date: 14 Aug 2020 Journal code: 8803591. E-ISSN: 1873-1708. L-ISSN: 0890-6238.	Category B, Relevant but supplementary articles after detailed assessment	Article provides useful information on neonates rats administered glyphosate after gestational exposure, but not altering the risk assessment. In addition, IP injection is not a preferred route of administration for human exposure. Only 2 dose levels were tested and no information on the purity of glyphosate was reported. No analytical determinations performed. No historical control data provided. Lack of positive control and information allowing to assess the robustness of the investigations and results.			
M-812319-01-1	Environment permissible concentrations of glyphosate in drinking water can influence the fate of neural stem cells from the subventricular zone of the postnatal mouse.	Masood Muhammad Irfan Naseem Mahrugh Warda Salam A Tapia-Laljena Maria Angeles Rehman Habib Ur Nasim Muhammad Jawad Schafer Karl Herbert	Environmental pollution (Barking, Essex : 1987), (2020 Dec 05) Vol. 270, pp. 116179. Electronic Publication Date: 5 Dec 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The article provides only supplementary information on neurotoxicity (in vitro experiment), but does not alter the existing risk assessment. The reporting on the test material is limited. Ca2+ uptake was investigated at too high concentrations not relevant for assessment (> 1mM), but the remaining endpoints were investigated at suitable concentrations (< 1 mM). No positive or negative controls were included and historical control data were not provided.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813576-01-1	Glyphosate exposure induces synaptic impairment in hippocampal neurons and cognitive deficits in developing rats.	Luna Sebastian; Neila Lorena P; Borgatello Conrado; Rosso Silvana B Luna Sebastian; Neila Lorena P; Borgatello Conrado; Rosso Silvana B Vena Rodrigo	Archives of toxicology, (2021 Apr 09) . Electronic Publication Date: 9 Apr 2021 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761.	Category B, Relevant but supplementary articles after detailed assessment	The aim of the study was to examine whether cognitive dysfunction induced by glyphosate was connected to changes on synapse formation and maturation. To understand how glyphosate affects synaptic assembly, an in vitro assays was performed on cultured hippocampal neurons that were exposed to the herbicide for 5 or 10 days at unrealistically high doses (0.5 or 1 mg/mL), which exceeds maximum physiological doses resulting from very high oral doses in vivo by at least 100-fold. In vivo experiments were performed with pup rats treated with 35 or 70 mg/kg of glyphosate from PND 7 to PND 27, every 48 h over 3-4 weeks via the irrelevant subcutaneous injection route of exposure.			
M-813598-01-1	A subchronic low-dose exposure of a glyphosate-based herbicide induces depressive and anxious-like behavior in mice: quercetin therapeutic approach.	Bicca Diogo Ferreira; Spiazzi Cristiano Chiapinotto; Ramalho Juliana Bernera; Soares Melina Bucco; Cibir Francielli Weber Santos	Environmental science and pollution research international, (2021 Jul 12) . Electronic Publication Date: 12 Jul 2021 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	The article provides supplementary information on the effect of a glyphosate formulation on the central nervous system and the therapeutic effect of the flavonoid quercetin.			
M-812411-01-1	Neurodevelopmental toxicity: Still more questions than answers.	Feldman, Virginia (correspondence)	The Lancet Neurology, (July 2014) Vol. 13, No. 7, pp. 645-646. Refs: 10 ISSN: 1474-4422; E-ISSN: 1474-4465 CODEN: LNAEAM	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812410-01-1	Neurodevelopmental toxicity: Still more questions than answers.	Goldstein, Daniel A. (correspondence); Saltmires, David A. Goldstein, Daniel A. (correspondence)	The Lancet Neurology, (July 2014) Vol. 13, No. 7, pp. 645. Refs: 12 ISSN: 1474-4422; E-ISSN: 1474-4465 CODEN: LNAEAM	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812412-01-1	Neurodevelopmental toxicity: Still more questions than answers - Authors' response.	Grandjean, Philippe (correspondence) Grandjean, Philippe (correspondence) Landrigan, Philip J.	The Lancet Neurology, (July 2014) Vol. 13, No. 7, pp. 648-649. Refs: 5 ISSN: 1474-4422; E-ISSN: 1474-4465 CODEN: LNAEAM	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-803471-01-1	Assessment of Chemical Effects on Neurite Outgrowth in PC12 cells Using High Content Screening.	Radio, Nicholas M.; Breier, Joseph M.; Shafer, Timothy J.; Mundy, William R.	Toxicol. Sci., Volume 105, Issue 1, Page 106-118, Publication Year 2008	Category B, Relevant but supplementary articles after detailed assessment	The data presented in this study provide only supportive information for the risk assessment regarding effect of glyphosate on outgrowth of neurites in differentiated Neuroscreen-1 cells.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813564-01-1	Identification of lncRNA expression profiles and analysis of ceRNA in the hippocampus of perinatal glyphosate-exposed mice.	Fan Xingli; Wang Dawei; Shen Xiangdi; Qiu Jianing; Wu Lihui; Ji Hua Fan Xingli; Yan Jie Yan Jie	International journal of developmental neuroscience : the official journal of the International Society for Developmental Neuroscience, (2021 Mar 13) . Electronic Publication Date: 13 Mar 2021 Journal code: 8401784. E-ISSN: 1873-474X. L-ISSN: 0736-5748.	Category B, Relevant but supplementary articles after detailed assessment	The article analyses the role of long noncoding RNAs in the mechanisms of glyphosate neurotoxicity in neuronal development through a perinatal glyphosate exposure (PGE) mouse model. The results provide supplementary information on lncRNA and potential relationship with neurotoxicity but do not alter the existing risk assessment.			
M-813573-01-1	Urinary excretion of herbicide co-formulants after oral exposure to roundup MON 52276 in rats.	Mesnage Robin Mazzacava Francesca; Caldwell Anna; Halket John Antoniou Michael N	Environmental research, (2021 Apr 01) Vol. 197, pp. 111103. Electronic Publication Date: 1 Apr 2021 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Category B, Relevant but supplementary articles after detailed assessment	Useful information about the urinary excretion of herbicide co-formulants after exposure to a glyphosate formulation in rats. It is only related to surfactant absorption/excretion which is then formulation specific. No toxicological effect.			
M-813557-01-1	Use of Shotgun Metagenomics and Metabolomics to Evaluate the Impact of Glyphosate or Roundup MON 52276 on the Gut Microbiota and Serum Metabolome of Sprague-Dawley Rats.	Mesnage Robin; Antoniou Michael Nicolas Teixeira Maxime; Amie Caroline; Panoff Jean-Michel Mandrioli Daniele; Falcioni Laura; Belpoggi Fiorella Ducarmon Quinten Raymond; Zwiittink Romy Danielle Mazzacava Francesca; Caldwell Anna; Halket John	Environmental health perspectives, (2021 Jan) Vol. 129, No. 1, pp. 17005. Electronic Publication Date: 27 Jan 2021 Journal code: 0330411. E-ISSN: 1552-9924. L-ISSN: 0091-6765. Report No.: PMC-PMC7839352.	Category B, Relevant but supplementary articles after detailed assessment	Potential effects to gut microbiota and serum metabolome are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear. However, this paper presents novel data with the use of multi-omics approaches evaluating the impact of glyphosate on the gut microbiota and serum metabolome of rats. This study may not be useful directly for risk assessment, but could help from a mode of action point of view.			
M-813524-01-1	Analysis of biomechanical parameters of muscle soleus contraction and blood biochemical parameters in rat with chronic glyphosate intoxication and therapeutic use of C60 fullerene.	Nozdrenko, Dmytro; Prylutska, Svitlana; Soroča, Vasil; Bogutska, Kateryna; Prylutskyi, Yuriy Abramchuk, Olga Prylutska, Svitlana Vygovska, Oksana Khrapatyi, Sergii Scharff, Peter; Ritter, Uwe (correspondence)	International Journal of Molecular Sciences, (1 May 2021) Vol. 22, No. 9. arn. 4977. Refs: 42 ISSN: 1661-6596; E-ISSN: 1422-0067	Category B, Relevant but supplementary articles after detailed assessment	The article presents an analysis of biomechanical and blood biochemical parameters in rat with chronic glyphosate intoxication and the use of C60 fullerene as effective nanotherapeutics in the treatment of glyphosate-based herbicide poisoning. This study provides useful information but does not alter the existing risk assessment.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813574-01-1	Pulmonary inflammatory response from co-exposure to LPS and glyphosate.	Pandher Upkardeep; Schnberger David; Thompson Brooke Kirychuk Shelley Aulakh Gurpreet Sethi R S Singh Baljit	Environmental toxicology and pharmacology, (2021 Mar 31) Vol. 86, pp. 103651. Electronic Publication Date: 31 Mar 2021 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Category B, Relevant but supplementary articles after detailed assessment	The article presents an evaluation of the pulmonary inflammatory response from co-exposure to LPS and glyphosate. This study provides useful information concerning to mode of action but does not alter the existing risk assessment.			
M-813600-01-1	Autism-like Behaviors in Male Juvenile Offspring after Maternal Glyphosate Exposure.	Pu Yaoyu; Ma Li; Shan Jiajing; Wan Xiayun; Hashimoto Kenji Hammock Bruce D	Clinical psychopharmacology and neuroscience : the official scientific journal of the Korean College of Neuropsychopharmacology, (2021 Aug 31) Vol. 19, No. 3, pp. 554-558. Journal code: 101207332. ISSN: 1738-1088. L-ISSN: 1738-1088. Report No.: PMC-PMC8316667.	Category B, Relevant but supplementary articles after detailed assessment	The aim of the study was to investigate whether maternal exposure of pure glyphosate could cause ASD-like behaviours in juvenile offspring. Water or 0.098% glyphosate (980 mg/L) was administered as drinking water from E5 to P21 (weaning). This level of glyphosate acid in water has a very low pH of approximately 2.3, which may confound the results of the test due to either pH effects on the gastrointestinal tract, or reduced water consumption in the test group causing some degree of dehydration. Male offspring showed ASD-like behavioural abnormalities (i.e., increasing grooming behaviour and social interaction deficit) after maternal exposure of glyphosate.			
M-813604-01-1	Response of the nuclear xenobiotic receptors to alleviate glyphosate-based herbicide-induced nephrotoxicity in weaned piglets.	Qiu Shengnan; Liu Yang; Gao Yanan; Fu Huiyang; Shi Baoming	Environmental science and pollution research international, (2021 Aug 10) . Electronic Publication Date: 10 Aug 2021 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	The article provides supplementary information on the effect of Roundup on piglet kidneys. The study also investigates the role of kidney nuclear xenobiotic receptors. The piglet is not a model validated in the toxicological studies in the EU evaluations, however the information can still be used as supplementary.			
M-813591-01-1	Glyphosate Interaction with eEF1a1 Indicates Altered Protein Synthesis: Evidence for Reduced Spermatogenesis and Cytostatic Effect.	Sopko Bruno; Erban Tomas Sopko Bruno Sopko Bruno; Tejral Gracian; Bitti Guissepe Sopko Bruno; Tejral Gracian; Bitti Guissepe; Amler Evzen Tejral Gracian; Amler Evzen Abate Marianna Medvedikova Martina; Hajduch Marian Chloupek Jan; Fajmonova Jolana Skoric Misa	ACS omega, (2021 Jun 15) Vol. 6, No. 23, pp. 14848-14857. Electronic Publication Date: 2 Jun 2021 Journal code: 101691658. E-ISSN: 2470-1343. L-ISSN: 2470-1343. Report No.: PMC-PMC8209799.	Category B, Relevant but supplementary articles after detailed assessment	The paper is a review of the literature that provides information on the mode of action of glyphosate via interaction with eEF1a1 pathway and spermatogenesis and cytostatic effects through a combination of in silico, in vitro and in vivo information. The aim of the study was to evaluate a previously unknown mechanism to explain a presumption that glyphosate exposure can negatively affect animals, including humans. Computer modeling suggested a probable interaction between glyphosate and eukaryotic translation elongation factor 1 subunit alpha 1 (eEF1a1), which was said to be confirmed by microcalorimetry, however, details on the calorimetry method are lacking, including concentration(s) of glyphosate interrogated.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813585-01-1	Comparative Evaluation of the Cytotoxicity of Glyphosate-Based Herbicides and Glycine in L929 and Caco2 Cells.	Truzzi Francesca; Mandrioli Daniele; Dinelli Giovanni; Mandrioli Daniele; Gnudi Federica; Belpoggi Fiorella; Scheepers Paul T J; Silbergeld Ellen K	Frontiers in public health, (2021) Vol. 9, pp. 643898. Electronic Publication Date: 7 May 2021 Journal code: 101616579. E-ISSN: 2296-2565. L-ISSN: 2296-2565. Report No.: PMC-PMC8138571.	Category B, Relevant but supplementary articles after detailed assessment	This article provides supplementary information on the cytotoxicity of glyphosate but does not alter the risk assessment.			
M-813420-01-1	Behavioral and Immunohistochemical Study of the Effects of Subchronic and Chronic Exposure to Glyphosate in Mice.	Ait Bali Yassine; Ba-Mhamed Saadia; Bennis Mohamed	Frontiers in behavioral neuroscience, (2017) Vol. 11, pp. 146. Electronic Publication Date: 8 Aug 2017 Journal code: 101477952. ISSN: 1662-5153. L-ISSN: 1662-5153. Report No.: PMC-PMC5550406.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested (Roundup, 486 g/L isopropylamine salt, 360 g/L a.e.) in vivo.			
M-813426-01-1	Behavioral impairments following repeated intranasal glyphosate-based herbicide administration in mice.	Baier Carlos Javier; Gallegos Cristina; Eugenia; Minetti Alejandra; Raisman-Vozari Rita	Neurotoxicology and teratology, (2017 Nov) Vol. 64, pp. 63-72. Electronic Publication Date: 20 Oct 2017 Journal code: 8709538. E-ISSN: 1872-9738. L-ISSN: 0892-0362.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested via intranasal administration.			
M-813109-01-1	Suspected poisoning of domestic animals by pesticides.	Caloni Francesca; Cortinovis Cristina; Rivolta Marina; Davanzo Franca	The Science of the total environment, (2016 Jan 01) Vol. 539, pp. 331-336. Electronic Publication Date: 11 Sep 2015 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Review article on domestic animal poisonings by pesticides.			
M-812203-01-1	In vitro assessment of skin sensitization, photosensitization and phototoxicity potential of commercial glyphosate-containing formulations.	de Avila Renato Ivan; Teixeira Gabriel; Campos; Moreira Larissa Cleres; Veloso Danillo Fabrini; Maciel Costa; Lima Eliana Martins; Valadares Marize Campos	Toxicology in vitro : an international journal published in association with BIBRA, (2017 Dec) Vol. 45, No. Pt 3, pp. 386-392. Electronic Publication Date: 4 Apr 2017 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Category B, Relevant but supplementary articles after detailed assessment	Unvalidated model confirms glyphosate non-sensitized & non-photosensitizer. Formulation data inconsistent in unvalidated model.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813241-01-1	Co-Formulants in Glyphosate-Based Herbicides Disrupt Aromatase Activity in Human Cells below Toxic Levels.	Defarge Nicolas; Lozano Veronica Laura; Mesnage Robin; Seralini Gilles-Eric Defarge Nicolas; Mesnage Robin; Spiroux de Vendomois Joel; Seralini Gilles-Eric Takacs Eszter; Szekacs Andras	International journal of environmental research and public health, (2016 Feb 26) Vol. 13, No. 3. Electronic Publication Date: 26 Feb 2016 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: NLM-PMC4808927; PMC-PMC4808927.	Category B, Relevant but supplementary articles after detailed assessment	In vitro results not significant for glyphosate vs multiple formulations or mixtures.			
M-813434-01-1	Label-free optical biosensor for real-time monitoring the cytotoxicity of xenobiotics: A proof of principle study on glyphosate.	Farkas Eniko; Kovacs Boglarka Szekacs Andras Olah Marianna Horvath Robert; Szekacs Inna	Journal of hazardous materials, (2018 Jun 05) Vol. 351, pp. 80-89. Electronic Publication Date: 23 Feb 2018 Journal code: 9422688. E-ISSN: 1873-3336. L-ISSN: 0304-3894.	Category B, Relevant but supplementary articles after detailed assessment	in vitro cytotoxicity assays			
M-812430-01-1	Glyphosate-based herbicides potentially affect cardiovascular system in mammals: review of the literature.	Gress Steeve Lemoine Sandrine; Seralini Gilles-Eric; Puddu Paolo Emilio	Cardiovascular toxicology, (2015 Apr) Vol. 15, No. 2, pp. 117-26. Journal code: 101135818. E-ISSN: 1559-0259. L-ISSN: 1530-7905.	Category B, Relevant but supplementary articles after detailed assessment	Literature review			
M-812173-01-1	Glyphosate induced cell death through apoptotic and autophagic mechanisms.	Gui Ya-xing Fan Xiao-ning; Wang Hong-mei; Wang Gang; Chen Sheng-di	Neurotoxicology and teratology, (2012 May-Jun) Vol. 34, No. 3, pp. 344-9. Electronic Publication Date: 4 Apr 2012 Journal code: 8709538. E-ISSN: 1872-9738. L-ISSN: 0892-0362.	Category B, Relevant but supplementary articles after detailed assessment	Unrealistically high in vitro dosing in the mM range.	Y		
M-812384-01-1	Mixtures of glyphosate and surfactant TN20 accelerate cell death via mitochondrial damage-induced apoptosis and necrosis.	Kim Young-hee Hong Jung-rak; Gil Hyo-wook; Song Ho-yeon; Hong Sae-yong	Toxicology in vitro : an international journal published in association with BIBRA, (2013 Feb) Vol. 27, No. 1, pp. 191-7. Electronic Publication Date: 23 Oct 2012 Journal code: 8712158. E-ISSN: 1879-3177. L-ISSN: 0887-2333.	Category B, Relevant but supplementary articles after detailed assessment	In vitro cytotoxicity endpoints measured for glyphosate & surfactant alone and in combination. No significant effects with glyphosate alone.	Y		
M-813222-01-1	Sublethal exposure to commercial formulations of the herbicides dicamba, 2,4-dichlorophenoxyacetic acid, and glyphosate cause changes in antibiotic susceptibility in Escherichia coli and Salmonella enterica serovar	Kurenbach Brigitta; Marjoshi Delphine; Gibson Paddy; Heinemann Jack A Amabile-Cuevas Carlos F Ferguson Gayle C Godsoe William	mBio, (2015 Mar 24) Vol. 6, No. 2. Electronic Publication Date: 24 Mar 2015 Journal code: 101519231. E-ISSN: 2150-7511. Report No.: NLM-PMC4453521; PMC-PMC4453521.	Category B, Relevant but supplementary articles after detailed assessment	Endpoints at doses tested not relevant to residues levels or to human health			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812414-01-1	The effect of glyphosate, its metabolites and impurities on erythrocyte acetylcholinesterase activity.	Kwiatkowska Marta Nowacka-Krukowska Hanna Bukowska Bozena	Environmental toxicology and pharmacology, (2014 May) Vol. 37, No. 3, pp. 1101-8. Electronic Publication Date: 18 Apr 2014 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Category B, Relevant but supplementary articles after detailed assessment	In vitro effects only noted at excessively high doses, 250-5000 uM.			
M-812367-01-1	Ethoxylated adjuvants of glyphosate-based herbicides are active principles of human cell toxicity.	Mesnage R Bernay B; Seralini G-E	Toxicology, (2013 Nov 16) Vol. 313, No. 2-3, pp. 122-8. Electronic Publication Date: 21 Sep 2012 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Category B, Relevant but supplementary articles after detailed assessment	Formulations, surfactants and glyphosate tested in vitro. Effects attributable to surfactant cytotoxicity.	Y		
M-813430-01-1	Facts and Fallacies in the Debate on Glyphosate Toxicity.	Mesnage Robin; Antoniou Michael N	Frontiers in public health, (2017) Vol. 5, pp. 316. Electronic Publication Date: 24 Nov 2017 Journal code: 101616579. ISSN: 2296-2565. L-ISSN: 2296-2565. Report No.: PMC-PMC5705608.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-533828-01-1	Major pesticides are more toxic to human cells than their declared active principles.	Mesnage Robin; Defarge Nicolas; Seralini Gilles-Eric Spiroux de Vendomois Joel	BioMed research international, (2014) Vol. 2014, pp. 179691. Electronic Publication Date: 26 Feb 2014 Journal code: 101600173. E-ISSN: 2314-6141. Report No.: NLM-PMC3955666; PMC-PMC3955666.	Category B, Relevant but supplementary articles after detailed assessment	In vitro cytotoxicity data at high doses not informative for hazard characterization.			
M-813250-01-1	Glyphosate: The Fate and Toxicology of a Herbicidal Amino Acid Derivative.	Saltmiras, D. A. [Reprint Author]; Farmer, D. R.; Mehrsheikh, A.; Bleeke, M. S.	DMello, JPF [Editor]. (2015) pp. 461-480. Amino Acids in Higher Plants. Publisher: CABI PUBLISHING-C A B INT, CABI PUBLISHING, WALLINGFORD OX10 8DE, OXON, UK. ISBN: 978-1-78064-263-5(P).	Category B, Relevant but supplementary articles after detailed assessment	Overview of glyphosate toxicology and fate data.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813151-01-1	In vitro cytotoxic effect of glyphosate mixture containing surfactants.	Song Ho-Yeon Kim Young-Hee; Seok Su-Jin; Gil Hyo-Wook; Hong Sae-Yong	Journal of Korean medical science, (2012 Jul) Vol. 27, No. 7, pp. 711-5. Electronic Publication Date: 29 Jun 2012 Journal code: 8703518. E-ISSN: 1598-6357. L-ISSN: 1011-8934. Report No.: NLM-PMC3390716; PMC-PMC3390716.	Category B, Relevant but supplementary articles after detailed assessment	In vitro mixture effects only, not glyphosate alone.			
M-803583-01-1	Genotoxicity of AMPA, the environmental metabolite of glyphosate, assessed by the Comet assay and cytogenetic tests.	Manas F; Peralta L; Santos, Aline de Souza Espindola; Lerro, Catherine C.; DellaValle, Curt T.; Ward, Mary H.; Alavanja, Michael C.; Berndt, Sonja I.; Freeman, Laura E. Beane; Sandler, Dale P.; Hofmann, Jonathan N.	Ecotoxicology and environmental safety, (2009 Mar) Vol. 72, No. 3, pp. 834-7. Electronic Publication Date: 14 Nov 2008	Category B, Relevant but supplementary articles after detailed assessment	Reporting deficiencies (purity of AMPA not specified, several parameters in the MNT not reported, only 2 dose levels used in both CA and MNT). Exposure route used in the MNT is not relevant for human exposure; methodological deficiencies (see guideline deviations). Too many limitations: absence of the HCD, number of scored cells well below those required by the OECD guidelines. In vivo micronucleus run using a route (intraperitoneal) not relevant for human risk assessment.	Y	Y	
M-813353-01-1	Lifetime pesticide use and antinuclear antibodies in male farmers from the agricultural health study	Parks, Christine G.; Santos, Aline de Souza Espindola; Lerro, Catherine C.; DellaValle, Curt T.; Ward, Mary H.; Alavanja, Michael C.; Berndt, Sonja I.; Freeman, Laura E. Beane; Sandler, Dale P.; Hofmann, Jonathan N.	Frontiers in Immunology (2019), 10, 1476 CODEN: FIRMCW; ISSN: 1664-3224 URL: http://www.frontiersin.org/Immunology	Category B, Relevant but supplementary articles after detailed assessment	The development of systemic autoimmunity in response to pesticide exposure was investigated in a retrospective study farmers. Serum antinuclear autoantibodies were measured by immunofluorescence on Hep-2 cells in 668 male farmers. The effect of lifetime use of 46 pesticides (glyphosate among them) on ANA were investigated. The results for glyphosate use demonstrate no increase the risk of farmers developing systemic autoimmunity. This information is useful in a weight of evidence assessment for the measured endpoint, which, however, is not a critical endpoint identified for human health risk assessment of glyphosate.			
M-813496-01-1	Kidney developmental effects of metal-herbicide mixtures: Implications for chronic kidney disease of unknown etiology.	Babich Remy Ulrich Jake C; Ferguson P Lee Ekanayake E M Dilini V; De Silva P Mangala C S Massarsky Andrey Manage Pathmalal M Jackson Brian P Di Giulio Richard T Drummond Iain A Jayasundara Nishad	Environment international, (2020 Nov) Vol. 144, pp. 106019. Electronic Publication Date: 17 Aug 2020 Journal code: 7807270. E-ISSN: 1873-6750. L-ISSN: 0160-4120.	Category B, Relevant but supplementary articles after detailed assessment	The article provides only supplementary information on kidney effects of glyphosate that does not alter the existing risk assessment. The purpose of the publication is to investigate the possible causes of chronic kidney disease of unknown etiology (CKDu) which is an emerging global concern affecting several agricultural communities in the Americas and South Asia. The hypothesis was that exposure to contaminants such as heavy metals (e.g., Cd, As, Pb, and V) and organic pesticides (e.g., glyphosate) present in the drinking water could provoke the onset and progression of this disease in childhood. Using zebrafish <i>Danio rerio</i> , a toxicology and kidney disease model, the authors examined kidney developmental effects of exposure to (i) environmentally derived samples from CKDu endemic and non-endemic regions and (ii) Cd, As, V, Pb and glyphosate as individual compounds and in mixtures. The authors found that drinking water is contaminated with various organic chemicals including nephrotoxic compounds as well as heavy metals, but at levels considered safe for drinking. Histological studies and gene expression analyses examining markers of kidney development (pax2a) and kidney injury (kim1) showed novel metal and glyphosate-metal mixture specific effects on kidney development. Glyphosate showed that interactive nephrotoxic effects of organic agrochemicals and heavy metals are an important consideration. For example, glyphosate at 10 ppb can induce kim1, implying that exposure to this chemical even at very low-levels can contribute to kidney injury. They postulate that exposure to glyphosate coupled with individuals with impaired kidney development is likely to increase the initiation and progression of CKDu. However, gene expression data also suggest, when in a mixture with metals such as arsenic, glyphosate may have alternate effects on kidneys, including effects that may not be detrimental. Test system of the study is not clearly and completely described. Metabolic activation system is not clearly and completely described. Cytotoxicity tests are not reported. Only 1 dose level was used which does not allow a dose response analysis. Furthermore, no positive control and no HCD provided.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813571-01-1	Ameliorative effect of N-acetylcysteine against glyphosate-induced hepatotoxicity in adult male albino rats: histopathological, biochemical, and molecular studies.	Hashim Asmaa R; Bashir Dina W; Yasin Noha A E; M El-Gharbawy S Galal Mona K	Environmental science and pollution research international, (2021 Apr 02) . Electronic Publication Date: 2 Apr 2021 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	The article provides supplementary information on the ability of N-acetylcysteine to ameliorate toxic effects of glyphosate on the liver if administered prior to glyphosate exposure.			
M-813549-01-1	Protective effect of melatonin against herbicides-induced hepatotoxicity in rats.	Almeida, Lecio Leone [Reprint Author]; Girao Nobre Pitombeira, Giovanna Silva; Coelho Teixeira, Alvaro Aguiar Teixeira, Valeria Wanderley; Silva Junior Valdemiro Amaro; Vieira Filho, Leucio Duarte; Evencio Neto, Joaquim	Toxicology Research, (JAN 2021) Vol. 10, No. 1, pp. 1-10. https://academic.oup.com/toxres . ISSN: 2045-452X. E-ISSN: 2045-4538.	Category B, Relevant but supplementary articles after detailed assessment	The article provides supplementary information on the ability of melatonin to ameliorate toxic effects of glyphosate on the liver.			
M-813713-01-1	Mechanism underlying the effect of long-term exposure to low dose of pesticides on DNA integrity.	Alleva, Renata [Reprint Author]; Manzella, Nicola; Gaetani, Simona; Bacchetti, Tiziana; Bracci, Massimo; Ciarapica, Veronica; Monaco, Federica; Borghi, Battista; Amati, Monica; Ferretti, Gianna; Tomasetti, Marco	Environmental Toxicology, (APR 2018) Vol. 33, No. 4, pp. 476-487. http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1522-7278 . ISSN: 1520-4081. E-ISSN: 1522-7278.	Category B, Relevant but supplementary articles after detailed assessment	Comparisons are to untreated cells rather than negative controls.			
M-812372-01-1	The interaction between pesticide use and genetic variants involved in lipid metabolism on prostate cancer risk	Andreotti, Gabriella; Koutros, Stella; Berndt, Sonja I.; Barry, Kathryn Hughes; Hou, Lifang; Hoppin, Jane A.; Sandler, Dale P.; Lubin, Jay H.; Burdette, Laurie A.; et al.	Journal of Cancer Epidemiology, (2012) pp. 358076, 11 pp.. CODEN: JCEOB8. ISSN: 1687-8566.	Category B, Relevant but supplementary articles after detailed assessment	Mechanism of measuring toxicity is not data requirement of (EC) 1107/2009; performed in a non-relevant test model.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813320-01-1	The effect of glyphosate on human sperm motility and sperm DNA fragmentation	Anifandis, George; Katsanaki, Katerina; Lagodonti, Georgia; Messina, Christina; Simopoulou, Mara; Dafopoulos, Konstantinos; Daponte, Alexandros	International Journal of Environmental Research and Public Health, (2018) Vol. 15, No. 6, pp. 1117/1-1117/8. CODEN: IJERGG. ISSN: 1660-4601.	Category B, Relevant but supplementary articles after detailed assessment	The glyphosate used is not characterized, only one test concentration was used, no positive control was considered and the results obtained are not corroborated by in vivo regulatory reproductive toxicology studies with much higher systemic levels of glyphosate.			
M-812236-01-1	Glyphosate and glyphosate-based herbicide exposure during the peripartum period affects maternal brain plasticity, maternal behaviour and microbiome	Dechartres, Julie; Pawlusk, Jodi L.; Gueguen, Marie-Madeleine; Jablaoui, Amin; Maguin, Emmanuelle; Rhimi, Moez; Charlier, Thierry D.	Journal of Neuroendocrinology, (2019) pp. Ahead of Print. CODEN: JOUNE2. ISSN: 0953-8194.	Category B, Relevant but supplementary articles after detailed assessment	The glyphosate used was not sufficiently characterised, only one dose level was tested, the number of animals used per dose level was too low (n = 7) and an unreliable technique for oral dosing was employed (injection of test item in cookies).			
M-813321-01-1	Comparative Assessment on Mechanism Underlying Renal Toxicity of Commercial Formulation of Roundup Herbicide and Glyphosate Alone in Male Albino Rat.	Dedeke, Gabriel A.; Owagboriaye, Folarin O. [Reprint Author]; Ademolu, Kehinde O.; Olujimi, Olanrewaju O.; Aladesida, Adeyinka A.	International Journal of Toxicology, (JUL-AUG 2018) Vol. 37, No. 4, pp. 285-295. http://ijt.sagepub.com/ . ISSN: 1091-5818. E-ISSN: 1092-874X.	Category B, Relevant but supplementary articles after detailed assessment	The glyphosate used was not sufficiently characterized, the number of animals used per dose level was too low, and the conduct of the biochemical tests and the analysis of glyphosate in kidney tissue was poorly described. Moreover, the results from the testing of the oxidative stress parameters seem not reliable.			
M-813406-01-1	In vitro effects of some herbicides and fungicides on human erythrocyte carbonic anhydrase activity	Gencer, N.; Erguen, A.; Demir, D.	Fresenius Environmental Bulletin (2012), Volume 21, Number 3, pp. 549-552, 27 refs. ISSN: 1018-4619 Published by: Parlar Scientific Publications, Freising URL (Availability): http://www.psp-parlar.de	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate tested was not sufficiently characterized, the conditions of the inhibition assay are incompletely reported, no positive control was used and the statistics are poorly reported.			
M-812382-01-1	Effects of sub-lethal exposure of rats to the herbicide glyphosate in drinking water: glutathione transferase enzyme activities, levels of reduced glutathione and lipid peroxidation in liver, kidneys and small intestine.	Larsen K Najle R; Lifschitz A; Virkel G	Environmental toxicology and pharmacology, (2012 Nov) Vol. 34, No. 3, pp. 811-8. Electronic Publication Date: 18 Sep 2012 Journal code: 9612020. E-ISSN: 1872-7077. L-ISSN: 1382-6689.	Category B, Relevant but supplementary articles after detailed assessment	Only 2 dose levels were used with only 4 animals per sex and per group. Effects were found on GSH in liver at sub-mg/kg bw dose levels which is not concordant with liver effects seen in regulatory toxicology studies performed at much higher dose levels.			
M-813466-01-1	Disruption of giant unilamellar vesicles mimicking cell membranes induced by the pesticides glyphosate and picloram	Lemma Tibebe Ruiz Gilia Cristine Marques; Constantino Carlos J L Oliveira Osvaldo N Jr	Biophysical chemistry, (2019 Jul) Vol. 250, pp. 106176. Electronic Publication Date: 26 Apr 2019 Journal code: 0403171. E-ISSN: 1873-4200. L-ISSN: 0301-4622.	Category B, Relevant but supplementary articles after detailed assessment	Novel assays and endpoints not applicable/reliable for risk assessment.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812444-01-1	Potential toxic effects of glyphosate and its commercial formulations below regulatory limits.	Mesnager R; Defarge N Spiroux de Vendomois J Seralini G E	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2015 Oct) Vol. 84, pp. 133-53. Electronic Publication Date: 14 Aug 2015 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278-	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-813463-01-1	Comparative studies on endogenous stress hormones, antioxidant, biochemical and hematological status of metabolic disturbance in albino rat exposed to roundup herbicide and its active ingredient glyphosate.	Owagboriaye Folarin; Adeleke Mistura Dedeke Gabriel; Ademolu Kehinde; Aladesida Adeyinka Olujimi Olanrewaju	Environmental science and pollution research international, (2019 May) Vol. 26, No. 14, pp. 14502-14512. Electronic Publication Date: 14 Mar 2019 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	Not sufficient information is given on the biochemical methods used. Therefore supplementary.			
M-813157-01-1	Histological and histochemical effects of Gly-phosate on testicular tissue and function.	Razi, M.; Golamreza, N.; Feyzi, S.; Karimi, A.; Shahmohammadloo, S.; Nejati, V.	Iranian Journal of Reproductive Medicine (2012), Volume 10, Number 3, pp. 181-192, 42 refs. ISSN: 1680-6433 Published by: Shahid Sadoughi University of Medical Sciences - Research and Clinical Center for Infertility, Yazd URL (Availability): http://www.ij	Category B, Relevant but supplementary articles after detailed assessment	No internationally accepted methods were used, only one dose level was considered, there was no characterisation of the test compound and the results are not corroborated by regulatory reproductive toxicity studies using much higher dose levels and longer times of exposure.			
M-812243-01-1	Effects of glyphosate on the ovarian function of pregnant mice, the secretion of hormones and the sex ratio of their fetuses.	Ren Xin; Li Ruonan; Liu Junze; Huang Kai; Wu Sheng; Li Yansen Li Chunmei	Environmental pollution (Barking, Essex : 1987), (2018 Dec) Vol. 243, No. Pt B, pp. 833-841. Electronic Publication Date: 10 Sep 2018 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	Not sufficient information is given on the biochemical methods used.			
M-812229-01-1	Glyphosate affects the secretion of regulators of uterine contractions in cows while it does not directly impair the motoric function of myometrium in vitro.	Wrobel Michael Hubert	Toxicology and applied pharmacology, (20180615) Vol. 349, pp. 55-61. Electronic Publication Date: 26 Apr 2018 Journal code: 0416575. E-ISSN: 1096-0333. L-ISSN: 0041-008X.	Category B, Relevant but supplementary articles after detailed assessment	The glyphosate used is not sufficiently characterized and the analysis of glyphosate, hormones and prostaglandins is not sufficiently documented.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-806456-01-1	An evaluation of the cytochrome P450 inhibition potential of selected pesticides in human hepatic microsomes.	Abass, Khaled; Turpeinen, Miia; Pelkonen, Olavi.	J. Environ. Sci. Health, Part B, Volume 44, Issue 6, Page 553-563, Publication Year 2009	Category B, Relevant but supplementary articles after detailed assessment	The study provides only supplementary information on hepatic CYP interaction in vitro; results do not change the existing risk assessment.			
M-806442-01-1	Cardiovascular effects of herbicides and formulated adjuvants on isolated rat aorta and heart.	Chan, Yin-Ching; Chang, Shih-Chieh; Hsuan, Shih-Ling; Chien, Maw-Sheng; Lee, Wei-Cheng; Kang, Jaw-Jou; Wang, Shun-Cheng; Liao, Jiunn-Wang.	Toxicol. in Vitro, Volume 21, Issue 4, Page 595-603, Publication Year 2007	Category B, Relevant but supplementary articles after detailed assessment	The article is relevant for the risk assessment since it analyses the effects on cardiovascular cells exposed to glyphosate technical grade. Although only additional information is provided for the risk assessment.			
M-806123-01-1	Cysteine turnover in human cell lines is influenced by glyphosate.	Hultberg, Malin	Environmental Toxicology and Pharmacology, (JUL 2007) Vol. 24, No. 1, pp. 19-22. http://www.journals.elsevier.com/environmental-toxicology-and-pharmacology/#description . ISSN: 1382-6689. E-ISSN: 1872-7077.	Category B, Relevant but supplementary articles after detailed assessment	The article is providing only supplementary information for the risk assessment regarding the effect of Glyphosate to intra and extra cellular cysteine and glutathione levels.			
M-813511-01-1	Functional expression and comparative characterization of nine murine cytochromes P450 by fluorescent inhibition screening	McLaughlin, Lesley A.; Dickmann, Leslie J.; Wolf, C. Roland; Henderson, Colin J.	Drug Metabolism and Disposition, (2008) Vol. 36, No. 7, pp. 1322-1331. CODEN: DMDSAI. ISSN: 0090-9556.	Category B, Relevant but supplementary articles after detailed assessment	The data presented in this study provide only supportive information for the risk assessment regarding potential interaction of glyphosate with mouse and human P450s involved in xenobiotic metabolism.			
M-812316-01-1	Cardiogenic shock with first-degree heart block in a patient with glyphosate-surfactant poisoning.	Ghosh Soumitra; Tale Sudheer; Garbhapu Anil Kolli Mrudula; Kaur Sumanpreet Bhalla Ashish	Tropical doctor, (2020 Nov 26) pp. 49475520971594. Electronic Publication Date: 26 Nov 2020 Journal code: 1301706. E-ISSN: 1758-1133. L-ISSN: 0049-4755.	Category B, Relevant but supplementary articles after detailed assessment	Medical data not altering the existing risk assessment. This paper is a case report that describes the case of a 34-year-old man who developed corrosive injury to his GI tract after ingesting 200 mL of formulated glyphosate. He went on to develop hypotension and transient multiorgan failure including myocardial dysfunction which improved with intensive supportive care. This sequence of events is not unexpected in large ingestions of formulated glyphosate.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813498-01-1	Glyphosate-induced Delayed Pyloric Obstruction, Ulcer and Scar Changes.	Hao Jin Yong; Jiang Tao; Huang Xiao Jun	Journal of the College of Physicians and Surgeons--Pakistan : JCPSP, (2020 Aug) Vol. 30, No. 8, pp. 868-870. Journal code: 9606447. E-ISSN: 1681-7168. L-ISSN: 1022-386X.	Category B, Relevant but supplementary articles after detailed assessment	Medical data not altering the existing risk assessment. This paper describes a case report of a 44-year-old woman who presented with pyloric obstruction two months after accidentally ingesting 100 mL of formulated glyphosate. After the initial ingestion, her family took her to the hospital where the patient was treated for 13 days and then discharged. She later returned to the hospital with recurrent nausea & vomiting, underwent endoscopy where they discovered scarring and pyloric obstruction. The patient underwent a partial gastrectomy and gastrojejunostomy with improvement of symptoms. This clinical course of events is not unexpected in significant ingestions of formulated glyphosate as these ingestions are corrosive and can cause scarring & gastric outlet obstruction.			
M-812309-01-1	Renal tubular injury by glyphosate-based herbicide.	Kimura Takahide; Yokoyama Takeshi; Tanemoto Masayuki	Clinical and experimental nephrology, (2020 Dec) Vol. 24, No. 12, pp. 1186. Electronic Publication Date: 1 Sep 2020 Journal code: 9709923. E-ISSN: 1437-7799. L-ISSN: 1342-1751.	Category B, Relevant but supplementary articles after detailed assessment	Medical data not altering the existing risk assessment. This is a case report with an image showing proximal tubular epithelial injury in a 78-year-old woman who ingested formulated glyphosate in a suicide attempt. This ingestion resulted in transient renal failure which improved with hemodialysis. This is not unexpected in large suicidal ingestions.			
M-813372-01-1	Deliberate self-poisoning in south odisha: study of its clinical profile and outcome	Nayak, Sachidananda; Behera, Bijaya Kumar; Budula, Keshaba Chandra; Acharya, Sritam	Asian Journal of Pharmaceutical and Clinical Research, (2020) Vol. 13, No. 8, pp. 169-173. CODEN: AJPCBB. ISSN: 0974-2441.	Category B, Relevant but supplementary articles after detailed assessment	Medical data not altering the existing risk assessment. This paper aimed to characterize the nature of self-poisoning in the Odisha region of India. Over a 2-year period they evaluated 200 patients who presented to the Maharaja Krishna Medical College and found that 149 (74.5%) patients had ingested pesticides. 10 patients ingested glyphosate. 9 developed nausea & vomiting, 2 developed corrosive injury to their GI tracts, 2 had pneumonitis likely due to aspiration, 2 developed hypotension, 2 had altered mental status, 2 developed dysrhythmias, 3 had dysphagia, 3 had dehydration & 2 died. There was certainly overlap in the clinical picture as there are more symptoms described than patients. The symptoms described are not unexpected as large ingestions of formulated glyphosate causes corrosive injury to the GI tract and subsequent hypotension & multiorgan failure. This paper should not impact the regulatory risk assessment as it describes suicidal ingestions.			
M-813452-01-1	Case report of pyloric obstruction caused by glyphosate herbicides.	Ren, Yingli; Jian, Xiangdong; Zhang, Zhongchen; Ning, Qiong Ren, Yingli; Kong, Li Kan, Baotian (correspondence)	Acta Medica Mediterranea, (2020) Vol. 36, No. 6, pp. 3385-3388. Refs: 5 ISSN: 0393-6384; E-ISSN: 2283-9720 CODEN: AMMCCI	Category B, Relevant but supplementary articles after detailed assessment	Medical data not altering the existing risk assessment. This paper is a case series describing 3 patients with formulated glyphosate ingestions. The authors describe pyloric obstruction and laryngeal scarring in the patients. Formulated glyphosate is caustic to the GI tract and airways so this clinical scenario is not unexpected. Given that these were ingestions, this type of case series should not impact the risk assessment.			
M-813495-01-1	Severe chemical burns related to dermal exposure to herbicide containing glyphosate and glufosinate with surfactant in Korea.	Shin Jihyun; Roh Sangchul Lim Namkyu	Annals of occupational and environmental medicine, (2020) Vol. 32, pp. e28. Electronic Publication Date: 20 Jul 2020 Journal code: 101609244. ISSN: 2052-4374. L-ISSN: 2052-4374. Report No.: PMC-PMC7406703.	Category B, Relevant but supplementary articles after detailed assessment	Medical data not altering the existing risk assessment. This article is a case report detailing an injury sustained by a farmer who was reportedly spraying a glyphosate/glufosinate herbicide formulation, spilled the contents of his back pack on his right shoulder & hip, did not wash the formulation off and presented 3 days after with rapidly progressive necrotizing wounds that have a necrotizing fasciitis appearance in the photos. Unfortunately, the patient succumbed to his injuries. These herbicides are not corrosive to the skin in this fashion, it is impossible to tell what the farmer was exposed to in this scenario as infectious processes can result in a very similar clinical appearance. This is completely atypical and should not be associated with glyphosate exposure.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813494-01-1	Seasonal glyphosate and AMPA levels in urine of children and adolescents living in rural regions of Northeastern Slovenia.	Stajko Anja Snoj Tratnik Janja; Kosjek Tina; Mazej Darja; Jagodic Marta; Horvat Milena Erzen Ivan	Environment international, (2020 Oct) Vol. 143, pp. 105985. Electronic Publication Date: 27 Jul 2020 Journal code: 7807270. E-ISSN: 1873-6750. L-ISSN: 0160-4120.	Category B, Relevant but supplementary articles after detailed assessment	Medical data not altering the existing risk assessment. This paper aimed to measure glyphosate and AMPA exposure in children & adolescents in Slovenian agricultural areas. They measured 1st morning urines in the 246 participants in the winter and again in 225 participants in the summer. They addressed the fact that the detection of AMPA could come from other detergent exposures and not from glyphosate alone. 221 blood samples were also drawn in the first sampling period. They detected glyphosate in 27% of the urine samples from the winter and 22% in the summer. Their data demonstrate much lower glyphosate concentrations than reported in other parts of the world. A large percentage of the children had concentrations less than the LOQ with 72% of the younger children & 74% of the older children testing below the LOQ in the first sampling period, and 79% of the younger & 76 % of the older testing below the LOQ in the 2nd period. The estimated systemic dose of glyphosate was 0.003 mcg/kg of body weight – significantly below the ADI of 0.1 mg/kg of body weight. This article supports the evidence that glyphosate exposures tend to be very low and don't pose a health risk.			
M-813375-01-1	A 9-year retrospective study of poisoning-related deaths in Southwest China (Sichuan)	Xiao, Li; Ye, Yi; Wang, Yanjun; Dai, Xinhua; Fang, Shiyong; Wei, Ying; Zheng, Yuzi; Wu, Hao; Fu, Yinqiang; Liao, Linchuan	Forensic Science International, (2020) pp. Ahead of Print. CODEN: FSINDR. ISSN: 0379-0738.	Category B, Relevant but supplementary articles after detailed assessment	Medical data not altering the existing risk assessment. This paper describes retrospective study evaluating 782 poisoning deaths in Sichuan Province, China. The deaths were characterized as accidental, suicidal or homicidal. Pesticide ingestion was responsible for 40% of deaths. Only 2 deaths were related to glyphosate formulations and no details were given about the cases.			
M-813453-01-1	Cytotoxicity and Oxidative Stress Responses of Imidacloprid and Glyphosate in Human Prostate Epithelial WPM-Y.1 Cell Line.	Abdel-Halim, Khaled Y.; Osman, Safaa R. (correspondence)	Journal of Toxicology, (2020) Vol. 2020. art. 4364650. Refs: 59 ISSN: 1687-8191; E-ISSN: 1687-8205	Category B, Relevant but supplementary articles after detailed assessment	The article provides only supplementary information on cytotoxicity of glyphosate on prostate cells that does not alter the existing risk assessment. The ability of glyphosate to induce in vitro cytotoxic and oxidative stress on normal human cells (prostate epithelial WPM-Y.1 cell line) was evaluated with the methyl tetrazolium test (MTT) and histopathological investigation. Cell viability was evaluated with an MTT test for 24 h. The median inhibition concentration (IC50) value was 0.025 mM for glyphosate. At low concentrations (mM), the examined pesticides significantly reduced cell viability and caused cell death. Coupling of cell viability, oxidative stress, and histopathological alterations provides good tools to assess the cytotoxicity of pesticides in vitro at low concentrations. Moreover, the abnormal damage of cell structure is considered an important signal of organ dysfunction. Metabolic activation system was not clearly and completely described. No HCD and no positive or negative control were reported.			
M-812239-01-1	Epigenome-wide association study for glyphosate induced transgenerational sperm DNA methylation and histone retention epigenetic biomarkers for disease.	Ben Maamar, Millissia; Beck, Daniel; Nilsson, Eric E.; Kubsad, Deepika; Skinner, Michael K. (correspondence) Skinner, Michael K. (correspondence)	Epigenetics, (2020) . Refs: 41 ISSN: 1559-2294; E-ISSN: 1559-2308	Category B, Relevant but supplementary articles after detailed assessment	The article provides only supplementary information on epigenetic effects of glyphosate that do not alter the existing risk assessment. The current study was designed to identify epigenetic biomarkers for glyphosate-induced transgenerational diseases using an epigenome-wide association study (EWAS). Following transient glyphosate exposure of gestating female rats (F0 generation), during the developmental period of gonadal sex determination, the subsequent transgenerational F3 generation, with no direct exposure, were aged to 1 year and animals with specific pathologies identified. The pathologies investigated included prostate disease, kidney disease, obesity, and presence of multiple disease. The sperm were collected from the glyphosate lineage males with only an individual disease and used to identify specific differential DNA methylation regions (DMRs) and the differential histone retention sites (DHRs) associated with that pathology. Unique signatures of DMRs and DHRs for each pathology were identified for the specific diseases. However, a comparison of DMRs and DHRs of the glyphosate treated animals versus the control animals was not performed. It is not clear what has been actually tested. Test conditions are not clearly and completely described. Only one dose level was reported / no dose-response relationship. Number of animals used per dose level not reported. Method of analysis was not described for analysis test media (no validation, no verifications). Furthermore, no HCD reported, and no positive controls.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812317-01-1	Effects of glyphosate-based herbicide-contaminated diets on reproductive organ toxicity and hypothalamic-pituitary-ovarian axis hormones in weaned piglets.	Fu Huiyang; Gao Feng; Wang Xiaoxu; Tan Peng; Qiu Shengnan; Shan Anshan Shi Baoming	Environmental pollution (Barking, Essex : 1987), (2020 Sep 08) pp. 115596. Electronic Publication Date: 8 Sep 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The study did not follow any OECD guideline and was not performed under GLP conditions. No analytical verifications of the test item in the diet were performed. In addition, there was no information on food consumption reported, therefore the actual intake of glyphosate by the animals remains unclear. The piglet tested in the study is an animal species that is not routinely used to investigate reproductive performances. The authors did not provide information on the sexual maturation in the tested strain which would have helped in the interpretation of parameters like the hormone levels and histopathology of the uterus and in the ovaries. Overall, for piglets that have been used in the recent years for investigation on potential effects on reproductive toxicity induced by a xenobiotic, it has been reported that in sexually immature animals a reliable histopathological and functional evaluation of possible test item-related effects on the female reproductive organs is not possible (1-4). In this study hormonal analyses has been performed only once at sacrifice when for reliable interpretation of the data, hormonal analysis should have been taken more times on the same animal (ideally before the treatment) and the time of sampling should be recorded. Therefore, the reliability of the hormonal data in this study is also questionable. In conclusion, the study presents many deficiencies and does not meet the basic scientific principles for this type of investigation and is it considered not to be reliable.			
M-812302-01-1	Ovarian mitochondrial and oxidative stress proteins are altered by glyphosate exposure in mice.	Ganesan Shanthi; Keating Aileen F	Toxicology and applied pharmacology, (20200901) Vol. 402, pp. 115116. Electronic Publication Date: 4 Jul 2020 Journal code: 0416575. E-ISSN: 1096-0333. L-ISSN: 0041-008X.	Category B, Relevant but supplementary articles after detailed assessment	This publication does not alter risk assessment negatively, since no (major) effects were found with any of the tested read outs. However, it could be used - with restrictions - as supporting evidence for lack of any effects of test item on liver, heart, spleen, kidney or uterine weight, AKT or gamma-H2AX protein abundance, or the ovarian level of steroidogenic proteins, or on estrous cyclicity and circulating E2 or P4. The study was performed following scientifically acceptable standards. However, reliability is given with restrictions since details on test item (e.g. purity), historical control data, positive controls and analysis of test media are missing.			
M-812305-01-1	Are glyphosate and glyphosate-based herbicides endocrine disruptors that alter female fertility?.	Ingaramo Paola; Alarcon Ramiro; Munoz-de-Toro Monica Luque Enrique H	Molecular and cellular endocrinology, (20201201) Vol. 518, pp. 110934. Electronic Publication Date: 10 Jul 2020 Journal code: 7500844. E-ISSN: 1872-8057. L-ISSN: 0303-7207.	Category B, Relevant but supplementary articles after detailed assessment	The review article selectively reports results of in vitro and in vivo studies suggesting endocrine disrupting properties of glyphosate and glyphosate-based herbicides at low or “environmentally relevant” dose levels in the female reproductive tissue. Most of the studies focused on the endocrine-disrupting effects of glyphosate in endocrine-dependent tissues (ovary and uterus). The authors claim that most of these studies show effects at very low concentrations, which would be undetected in traditional toxicology studies. However, they did not adequately explain the design of the experiments, address potential confounders in the cited studies (e.g., overt and systemic toxicity, cytotoxicity) that impact the studies validity to inform an endocrine assessment, nor the reasons why the reported investigations can detect effects that the comprehensive database of regulatory toxicity studies for glyphosate were not able to ascertain. The most significant flaw with this review was the omission of numerous reliable and relevant published in vitro and in vivo studies, and publicly available regulatory assessments, that are critical to inform a weight of evidence assessment for glyphosate and GBHs. The missing information was largely included in the recent 2017 EFSA Glyphosate ED weight of evidence evaluation where it was concluded that glyphosate is not an endocrine disruptor. Figure 1 proposes mechanisms of endocrine disruption that include impact on aromatase activity, estrogenic effects through a ligand-independent mechanism, cell proliferation, and expression of oestrogen-dependent proteins. It was concluded in the recent 2015 USEPA and 2017 EFSA weight of evidence ED assessments that glyphosate does not impact steroidogenesis including aromatase activity. Findings in the articles cited in figure 1 for aromatase activity are confounded by non-specific effects of supraphysiological concentrations of the surfactant in these formulations in in vitro or in vivo systems. There is no evidence of glyphosate impacting aromatase expression or activity by assessing apical endpoints in the comprehensive toxicology database for glyphosate (for review see Levine et al. 2020). Figure 1 also purports that glyphosate is a ligand for the oestrogen receptor. It has been well established that glyphosate is not a ligand for the oestrogen receptor and does not transactivate the oestrogen responsive genes endpoints (for a comprehensive review of the oestrogen pathway see Levine et al. 2020). The paper cited in figure 1 to support a ligand-independent mechanism by Mesnage et al. 2017 was reported to only occur at the unrealistic exposure concentration of 20,000 mg glyphosate a.e./L (118 µm) and by activating protein kinase A that increases the phosphorylation and activation of the oestrogen receptor. Mesnage et al. did not provide evidence in their paper that the phosphorylation status of the oestrogen receptor was changed to support their hypothesis nor is this hypothesis consistent with the weight of evidence from validate functional assays. Figure 1 also proposes that glyphosate can cause cell proliferation through and endocrine mechanism. This hypothesis is inconsistent with results of the comprehensive database of glyphosate toxicology studies. The key citation that support this hypothesis is by Thongprakaisang et al. 2013. Mesnage et al. 2017 concluded the results in Thongprakaisang et al. 2013 likely result from contamination and not glyphosate. An earlier study that reported modest proliferation by glyphosate only occurred at the extremely high concentration of 1000 µM and the authors concluded that the modest proliferation observed in their study resulted from a non-endocrine mechanism (Lin and Garry, 2000). The final endocrine mechanism described in figure 1 refers to expression of oestrogen-dependent proteins. The significance of these findings is questionable based on the results of the endocrine screening battery reviewed by EFSA in 2017 and the comprehensive regulatory toxicology database for glyphosate. The authors, however, recognize that it was not possible to reproduce in vivo most of the effects of glyphosate and/or GBHs observed in vitro. They claim this could be due that the species tested are not the appropriate ones and claimed that the sheep constitute a highly appropriate model to evaluate the effects of EDCs due to the similarity between sheep and humans, especially regarding gestational and thyroid physiologies and brain ontogeny. However, robust data supporting this assumption are limited. The article is classified as not reliable since it omitted several relevant articles. The authors did not critically evaluate the relevance and reliability of the studies to assess an adverse effect through an endocrine mechanism, nor include the relevant studies from the comprehensive regulatory toxicology database for glyphosate that include mechanistic and apical endpoints that inform a weight of evidence analysis of EATS pathways.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812506-01-1	Review and analysis of the potential for glyphosate to interact with the estrogen, androgen and thyroid pathways. Special Issue: Glyphosate exposure and toxicology.	Levine, S. L.; Webb, E. G.; Saltmiras, D. A.	Pest Management Science (2020), Volume 76, Number 9, pp. 2886-2906, 86 refs. ISSN: 1526-498X DOI: 10.1002/ps.5983 Published by: Wiley, Chichester URL (Availability): https://onlinelibrary.wiley.com/doi/10.1002/ps.5983	Category B, Relevant but supplementary articles after detailed assessment	A systematic literature review was performed including US EPA EDSP Tier 1 battery assessment, guideline regulatory studies, ESDP including 5 in vitro and 6 in vivo assays to evaluate the EAT pathways. From the available literature, it was concluded that glyphosate does not have an endocrine disrupting potential through estrogenic, androgenic or steroidogenic activity. The review includes relevant literature which has been used for the ED assessment during the current submission process. It can therefore serve as supporting information, however as a review it does not provide new primary data or alter the risk assessment. Therefore, the review has been classified as a relevant but supplementary only.			
M-812312-01-1	Glyphosate and the key characteristics of an endocrine disruptor: A review.	Munoz Juan P; Bleak Tammy C Calaf Gloria M	Chemosphere, (2020 Oct 19) pp. 128619. Electronic Publication Date: 19 Oct 2020 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	Munoz et al. based on the ten key characteristics (KC) of Endocrine Disrupting Chemicals (EDCs) recently proposed (La Merrill et al., 2020) reviewed a selective set of publications related to glyphosate as a possible endocrine disruptor. The authors claim that glyphosate exhibited eight of the ten KCs of an EDC. This checklist of KC was not created in conjunction with nor is it recognised by any regulatory agency as a replacement for established weight of evidence approaches used by regulatory agencies to assess whether a compound is an endocrine disruptor. The authors did not perform a systematic review for glyphosate of the publicly available information resulting in a significant flaw with this publication, the omission of numerous reliable and relevant published in vitro and in vivo studies, and publicly available regulatory assessments, that are critical to inform a weight of evidence assessment for glyphosate. Glyphosate has undergone extensive regulatory testing and assessment to evaluate its potential to be an endocrine disruptor. In 2015 the US EPA released its weight of evidence evaluation of glyphosate and more recently the European Food Safety Authority in 2017, who independently performed an endocrine assessment as part of the glyphosate renewal process. Both agencies concluded based on the US EPA EDSP battery and all other scientifically relevant information that glyphosate does not interact with the oestrogen, androgen thyroid and steroidogenic pathways and concluded that glyphosate is not an endocrine disruptor. Furthermore, the cited studies in Munoz et al. 2020 were not critically evaluated for relevance and reliability nor evaluated with a weight of evidence to conclude whether the criteria for each key characteristic was met. The authors state "Here, we conduct a comprehensive review where we describe the most important findings of the glyphosate effects in the endocrine system and assess the mechanistic evidence to classify it as and EDC". However, many of the studies the authors cite as evidence for glyphosate meeting one of the KC they used studies that were conducted with a glyphosate-based formulation only. The authors generally focused on a small subset of papers that used non-standard in vitro methods that tested glyphosate-based formulations at unrealistically high levels and in vivo studies that don't follow international guidelines. These papers inflate the relevance of findings derived from their in vitro models to the in vivo situation and invariably fail to discuss or recognize confounding effects of the formulation. As a result, these papers and not considered to be reliable for an endocrine assessment. Many relevant pieces of information are missing such as studies from the comprehensive regulatory toxicology database for glyphosate, regulatory reviews and reliable publications. The authors did not conduct a systematic review of the literature, they did not critically review the quality and relevance of the literature they cited, they used results from studies with glyphosate-based formulations as if it was glyphosate alone, they mixed and mingled the results of glyphosate with that of formulated products to make their conclusions, and this was not a WoE assessment including mechanistic and apical endpoints for EATS pathways.			
M-812308-01-1	Cytotoxicity and hormonal activity of glyphosate-based herbicides.	Toth Gergo; Rado Julia; Kriszt Balazs; Szoboszlai Sandor Hahn Judit Szalai Diana A	Environmental pollution (Barking, Essex : 1987), (2020 Oct) Vol. 265, No. Pt B, pp. 115027. Electronic Publication Date: 21 Jun 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	This article provides only supplementary information for risk assessment, since the in vitro experiments were performed with yeast instead of human cells. Nevertheless, the findings showed, that neither glyphosate nor AMPA impaired estrogenic or androgenic activity in the test system. Purity and storage conditions of test items and historical control data not reported. Positive controls applied, but data not shown. This study claims that POEA and some glyphosate-based formulations are estrogenic and/or androgenic. However, the study does not provide reliable information that POEA or any of the tested formulations are estrogenic and/or androgenic. The results claiming estrogenicity and/or androgenicity of the formulations are not in agreement with what would be predicted based on chemical structures of the surfactants and are apparently confounded by cytotoxicity based on responses presented within the paper. Because of the surface-active properties (i.e. surfactant properties) of POEA and other surfactants, it is very difficult to generate interpretable results from in vitro or cell-based assays, like the yeast assay, with surfactants. Rather, conclusions of estrogenicity and androgenicity should be based on in vivo studies. Even if the activity levels claiming estrogenic or androgenic activity are taken at face value, their potency for the estrogen and androgen receptors is so low these responses are not considered biologically relevant and realistic exposures to these substances are far below reported effect levels in the paper.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-768956-01-1	Molecular Basis for Endocrine Disruption by Pesticides Targeting Aromatase and Estrogen Receptor.	Zhang Chao; Bianchi Silvia; Gilardi Gianfranco; Di Nardo Giovanna Schiliro Tiziana; Gea Marta Spinello Angelo; Magistrato Alessandra	International journal of environmental research and public health, (2020)0805 Vol. 17, No. 16. Electronic Publication Date: 5 Aug 2020 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: PMC-PMC7459580.	Category B, Relevant but supplementary articles after detailed assessment	This article has been allocated under the technical section toxicology in order to complete the statistics (see tables under chapter Introduction and Search results), however the article belongs and was reviewed by both technical sections, ecotoxicology and toxicology, and the justification for its irrelevance (ecotoxicology) and Category B (toxicology) is presented below. TOXICOLOGY: The article provides only supplementary information on in vitro data and binding information gained by in silico models but not altering the existing risk assessment. Limited information on test material (batch, analytical purity) provided. Historical control data were not included. The reported inhibition of aromatase activity (up to 30% at 100 µM glyphosate acid) is likely related to using ethanol or DMSO as a solvent for glyphosate, rather than water or buffer. Glyphosate is not soluble in an organic solvent, like ethanol or DMSO, and this likely confounded the results of the assay because glyphosate was not fully solubilized. Zhang et al. used recombinant CYP19 at low protein levels in the assay and did not add a "buffering protein" like BSA, which made the aromatase enzyme, and its associated reductase, susceptible to denaturation. Consistent with denaturing the aromatase enzyme, the slope of the inhibition curve was extremely shallow, uncharacteristic of aromatase inhibition, and likely reflects confounding effects of undissolved test substance. In the USEPA's test guideline for aromatase activity, activity of < 25% is considered negative and activity between 25% and < 50% is considered equivocal. Greater than 50% inhibition must be estimated for a substance to be considered positive in EPA's guideline study. ECOTOXICOLOGY: This study, testing glyphosate for its ability to interfere with human estrogen biosynthesis and/or signaling, to evaluate its potential action as endocrine disrupting chemical (EDC), presents findings based on cellular/molecular level that cannot be related to the ecotoxicological risk assessment. These effects do not proof correspondance to adverse ecotoxicological effects. In addition, it is conducted using human aromatase and MELN cells and thus this paper is rather relevant for toxicology than for ecotoxicology. The generated outcomes are not relatable to the EU level ecotoxicological risk assessment. In addition, the test item is not fully identified. There are a number of confounding issues with the paper, that make it unreliable for use in risk assessment, linking to back ground levels of 17-beta-estradiol and to the solvents used in the assay ethanol and DMSO - and the fact that glyphosate was not fully solubilized, leading to an inhibition curve slope that was consistent with denaturing of the aromatase enzyme. These factors cannot be excluded as having had influence on the results. A lack of positive control information in the paper also does not help to substantiate the findings. The findings also go against the EPAs review. Altogether, these facts suggest strongly that the authors results are artifacts of the poor solubilization of the test substance. Therefore the publication is not relevant for the risk assessment.			
M-812313-01-1	Melatonin alleviates the deterioration of oocytes and hormonal disorders from mice subjected to glyphosate.	Zhang Jingwen Zhao Chengtian Shi Feifei; Zhang Shaozhi; Wang Sijie Feng Xizeng	Molecular and cellular endocrinology, (2021 Jan 15) Vol. 520, pp. 111073. Electronic Publication Date: 4 Nov 2020 Journal code: 7500844. E-ISSN: 1872-8057. L-ISSN: 0303-7207.	Category B, Relevant but supplementary articles after detailed assessment	The publication investigates whether melatonin can improve reproductive defects caused by glyphosate. No new information on glyphosate toxicity is provided, the article does not alter the existing risk assessment. There is a limited information on test material provided (no information on source, batch or purity), limited information on test animals (no information on housing, environmental conditions or weight), no historical control data provided.			
2015_647846 - S	Development of a recombinant human ovarian (BG1) cell line containing estrogen receptor α and β for improved detection of estrogenic/antiestrogenic chemicals	Brennan, Jennifer C.; Bassal, Arzoo; He, Guochun; Denison, Michael S.	Environmental Toxicology and Chemistry, (2016) Vol. 35, No. 1, pp. 91-100. CODEN: ETODCK. ISSN: 0730-7268.	Category B, Relevant but supplementary articles after detailed assessment	Limited data on glyphosate.			
M-812500-01-1	Erratum to "High-Throughput H295R Steroidogenesis Assay: Utility as an Alternative and a Statistical Approach to Characterize Effects on Steroidogenesis" [Erratum to document cited in CA170:001133]	Haggard, Derik E.; Karmaus, Agnes L.; Martin, Matthew T.; Judson, Richard S.; Setzer, R. Woodrow; Friedman, Katie Paul	Toxicological Sciences, (2018) Vol. 164, No. 2, pp. 646. CODEN: TOSCF2. ISSN: 1096-0929.	Category B, Relevant but supplementary articles after detailed assessment	Erratum to Haggard_2018			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812494-01-1	High-throughput H295R steroidogenesis assay: utility as an alternative and a statistical approach to characterize effects on steroidogenesis	Haggard, Derik E.; Karmaus, Agnes L.; Martin, Matthew T.; Judson, Richard S.; Setzer, R. Woodrow; Friedman, Katie Paul	Toxicological Sciences, (2018) Vol. 162, No. 2, pp. 509-534. CODEN: TOSCF2. ISSN: 1096-0929.	Category B, Relevant but supplementary articles after detailed assessment	ToxCast data for high throughput H295R assay not available on glyphosate, presumably because it is not soluble in DMSO.			
M-812425-01-1	Letter to the editor regarding the article by Paganelli et al.	Palma Gaston	Chemical research in toxicology, (2011 Jun 20) Vol. 24, No. 6, pp. 775-6. Electronic Publication Date: 31 May 2011 Journal code: 8807448. E-ISSN: 1520-5010. L-ISSN: 0893-228X.	Category B, Relevant but supplementary articles after detailed assessment	letter to editor			
M-813423-01-1	Analysis of endocrine disruption effect of Roundup® in adrenal gland of male rats.	Pandey Aparamita; Rudraiah Medhamurthy	Toxicology reports, (2015) Vol. 2, pp. 1075-1085. Electronic Publication Date: 3 Aug 2015 Journal code: 101630272. ISSN: 2214-7500. L-ISSN: 2214-7500. Report No.: PMC-PMC5598379.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested in vivo (Roundup, 41%, India)			
M-812472-01-1	Identification of candidate reference chemicals for in vitro steroidogenesis assays	Pinto Lucia, Caroline; Markey, Kristan; Dix, David; Browne, Patience	Toxicology In Vitro, (2018) Vol. 47, pp. 103-119. CODEN: TIVIEQ. ISSN: 0887-2333.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-812234-01-1	Glyphosate induces growth of estrogen receptor alpha positive cholangiocarcinoma cells via non-genomic estrogen receptor/ERK1/2 signaling pathway.	Sritana Narongrit Suriyo Tawit Kanitwithayanun Jantamas Songvasin Benjaporn Homkajorn Thiantanawat Apinya Satayavivad Jutamaad	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2018 Aug) Vol. 118, pp. 595-607. Electronic Publication Date: 8 Jun 2018 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278	Category B, Relevant but supplementary articles after detailed assessment	The results showed that glyphosate has the same potency as E2 when tested at extremely low concentrations which has not been corroborated by other ED studies.			
M-803459-01-1	Alteration of estrogen-regulated gene expression in human cells induced by the agricultural and horticultural herbicide glyphosate .	Hokanson R; Fudge R; Chowdhary R; Busbee D	Human and experimental toxicology, (2007 Sep) Vol. 26, No. 9, pp. 747-52.	Category B, Relevant but supplementary articles after detailed assessment	The toxicity of glyphosate product (15%) was examined as a function of its capacity to alter gene expression (29 up and down regulated genes) in the presence or absence of estrogen. Temporal altered gene expression is not a biomarker for toxicity, but rather, may be within the range of normal biological responses of homeostasis. In vitro cytotoxicity of surfactants, however, is a significant confounder in data interpretation. Data do not reflect real in vivo exposure situations, and therefore only provides supporting information for human risk assessment purposes.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813493-01-1	Glyphosate and its formulation Roundup impair pig oocyte maturation.	Spinaci Marcella; Nerozzi Chiara; Tamanini Car Lo; Bucci Diego; Galeati Giovanna	Scientific reports, (20200720) Vol. 10, No. 1, pp. 12007. Electronic Publication Date: 20 Jul 2020 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC7371730.	Category B, Relevant but supplementary articles after detailed assessment	The article provides only supplementary information on maturation, steroidogenesis and oxidative stress markers of cumulus-oocyte complexes (COCs) from pigs, but not altering the existing risk assessment. In addition, effects were mainly found at unphysiologically high doses (> 1 mM). The purity and storage conditions of the test item were not reported. No cytotoxicity testing performed, no positive and truly negative controls performed and also no historical control data provided. No metabolic activation system applied.			
M-813355-01-1	Glyphosate and pendimethalin in breast milk samples from Egyptian rural areas: a pilot study for infant's risk assessment	Abdel-Halim, Khaled Y.; Abuzeid, Mohamed A. F.; Seddik, Fayza A.; Khodzimy, Alaa M.	International Journal of Advanced Research, (2019) Vol. 7, No. 9, pp. 991-1002. CODEN: IJARND. ISSN: 2320-5407.	Category B, Relevant but supplementary articles after detailed assessment	This article claims that glyphosate was detected in breast milk. It was published in what appears to be a journal that has little, if any peer review. There are several technical issues with this study: 1st: The solubility of glyphosate in toluene is reported as only 36 PPM. The highest sample values the paper claims just under 30 PPM. So if we had roughly 30 PPM of glyphosate in milk and took 5 mL for analysis then the toluene would have to be capable of solubilizing 150 PPM of glyphosate! 2nd: And this is a key issue – the HPLC method lists an excitation wavelength that is higher than the emission wavelength! This article should not impact the risk assessment / re-registration. There are several studies evaluating whether glyphosate is detectable in cows milk. A study in human breast milk also was conducted and concluded that glyphosate was not detectable. References: - Michelle K McGuire, Mark A McGuire, William J Price, Bahman Shafii, Janae M Carrothers, Kimberly A Lackey, Daniel A Goldstein, Pamela K Jensen, John L Vicini. Glyphosate and aminomethylphosphonic acid are not detectable in human milk, The American Journal of Clinical Nutrition, Volume 103, Issue 5, May 2016, Pages 1285–1290, https://doi.org/10.3945/ajcn.115.126854 - EFSA. (2018). National summary reports on pesticide residue analysis performed in 2016. EFSA Journal, 16(7), 5348. https://doi.org/10.2903/j.efsa.2018.EN-1454 - EFSA. (2019). The 2017 European Union report on pesticide residues in food. EFSA Journal, 17(6), 5743. https://doi.org/10.2903/j.efsa.2019.5743 - EFSA. (2020). The 2018 European Union report on pesticide residues in food. EFSA Journal, 18(4), e06057. https://doi.org/10.2903/j.efsa.2020.6057 - FDA. (2018). Pesticide residue monitoring program. Fiscal year 2016 pesticide report. FDA. https://www.fda.gov/Food/FoodborneIllnessContaminants/Pesticides/ucm618247.htm - FDA. (2019). Pesticide residue monitoring program fiscal year 2017 pesticide report. https://www.fda.gov/food/pesticides/pesticide-residue-monitoring-2017-report-and-data - Ehling, S., & Reddy, T. M. (2015). Analysis of glyphosate and aminomethylphosphonic acid in nutritional ingredients and milk by derivatization with fluorenylmethylloxycarbonyl chloride and liquid chromatography-mass spectrometry. Journal of Agricultural and Food Chemistry, 63(48), 10562-10568. https://doi.org/10.1021/acs.jafc.5b04453 - NZ Ministry for Primary Industries. (2012). Dairy national chemical contaminants programme - raw milk result summary 2011/12. Retrieved 12/15/2015 from http://www.foodsafety.govt.nz/elibrary/industry/dairy-nccp-results-summary.pdf - Steinborn, A., Alder, L., Michalski, B., Zomer, P., Bendig, P., Martínez, S. A., Mol, H. G., Class, T. J., & Costa Pinheiro, N. (2016). Determination of glyphosate levels in breast milk samples from Germany by LC-MS/MS and GC-MS/MS. Journal of Agricultural and Food Chemistry, 64(6), 1414-1421. https://doi.org/10.1021/acs.jafc.5b05852 - von Soosten, D., Meyer, U., Hühner, L., Dänicke, S., Lahrssen-Wiederholt, M., Schaffl, H., Spolders, M., & Breves, G. (2016). Excretion pathways and ruminal disappearance of glyphosate and its degradation product aminomethylphosphonic acid in dairy cows. Journal of Dairy Science, 99(7), 5318-5324. https://doi.org/10.3168/jds.2015-10585 - Zhao, J., Pacenka, S., Wu, J., Richards, B. K., Steenhuis, T., Simpson, K., & Hay, A. G. (2018). Detection of glyphosate residues in companion animal feeds. Environmental Pollution, 243(Pt B), 1113-1118. https://doi.org/10.1016/j.envpol.2018.08.100			
M-813487-01-1	Exposure to glyphosate and risk of non-Hodgkin lymphoma and multiple myeloma: an updated meta-analysis.	Donato Francesca; Pira Enrico; Ciocan Catalina Boffetta Paolo	La Medicina del lavoro, (2020 Feb 24) Vol. 111, No. 1, pp. 63-73. Electronic Publication Date: 24 Feb 2020 Journal code: 0401176. ISSN: 0025-7818. L-ISSN: 0025-7818.	Category B, Relevant but supplementary articles after detailed assessment	there is nothing that has been done in this (or other) meta-analysis to address recall bias, selection bias, and failure to control for confounding factors in the NHL case-control studies.			
M-813442-01-1	Poisoning by pesticides.	Eddleston, Michael	Medicine (United Kingdom), (March 2020) Vol. 48, No. 3, pp. 214-217. Refs: 5 ISSN: 1357-3039; E-ISSN: 1365-4357	Category B, Relevant but supplementary articles after detailed assessment	This is a review article discussing the clinical features and management of pesticide overdoses. The article comments that glyphosate has much lower toxicity in acute overdose than older pesticides and discusses the use of supportive care in these overdoses. Since this describes the management of suicidal overdoses it should not impact the risk assessment / re-registration.			

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M-813444-01-1	Haemodialysis as an imperative treating modality in severe glyphosate-surfactant poisoning.	Rajput, Rajesh, Prof., Dr. (correspondence) Karamvir; Misra, Sanat; Saini, Neharika; Venkatesh Darshan, A.N.	Journal, Indian Academy of Clinical Medicine, (2019) Vol. 20, No. 3-4, pp. 224-226. Refs: 12 ISSN: 0972-3560	Category B, Relevant but supplementary articles after detailed assessment	This is a case report of a patient who developed hyperkalaemia, renal failure and pulmonary edema after a suicidal ingestion of formulated glyphosate. These clinical features are common with large ingestions. Hemodialysis is standard of care in cases such as these. This report raises no new clinical features regarding this type of overdose and should not impact risk assessment / re-registration.			
M-813447-01-1	Cases report of gastrointestinal hemorrhage caused by glyphosate herbicides.	Ren, Yingli; Jian, Xiangdong (correspondence); Zhang, Zhongchen; Ning, Qiong; Kan, Baotian Ren, Yingli; Kong, Li	Acta Medica Mediterranea, (2020) Vol. 36, No. 3, pp. 1611-1614. Refs: 8 ISSN: 0393-6384; E-ISSN: 2283-9720 CODEN: AMMCCI	Category B, Relevant but supplementary articles after detailed assessment	This article describes two patients with GI hemorrhage after formulated glyphosate ingestion. According to the history, the first patient drank excessive amounts of ethanol for a long time, which in and of itself can contribute to GI ulceration and bleeding. He also ingested triazalone. This patient's course appears to be atypical as the patient appears to have been stable on admission, was in the hospital for weeks, underwent multiple endoscopic procedures for 2 weeks after ingestion and later developed significant GI bleeding necessitating a gastrectomy. In formulated glyphosate overdoses, corrosive injury to the GI tract occurs early due to the surfactant. The second patient in this report also presented with corrosive injury to the GI tract which is not unexpected. Since this paper describes suicidal ingestions it should not impact the risk assessment / re-registration.			
M-812296-01-1	Glyphosate and AMPA levels in human urine samples and their correlation with food consumption: results of the cross-sectional KarMeN study in Germany.	Soukup Sebastian T; Kulling Sabine E Merz Benedikt; Bub Achim; Watzl Bernhard Hoffmann Ingrid Steinberg Pablo	Archives of toxicology, (20200500) Vol. 94, No. 5, pp. 1575-1584. Electronic Publication Date: 30 Mar 2020 Journal code: 0417615. E-ISSN: 1432-0738. L-ISSN: 0340-5761. Report No.: PMC-PMC7261737.	Category B, Relevant but supplementary articles after detailed assessment	The authors calculated the intake of glyphosate and AMPA based on urinary concentrations and checked this value against the EU acceptable daily intake (ADI) value for glyphosate. The exposure to glyphosate and AMPA was found to be very low. Quantifiable levels of glyphosate and/or AMPA was detected in 8.3% (25 out of 301) of the participants with the highest reported value (0.63 µg/kg BW) being 0.13% of the ADI. 24-hr urine samples were collected from 301 adults for analysis of glyphosate. The study subjects were recruited to be healthy and not taking medications. The glyphosate exposures as a percent of the ADI were calculated. However, unlike previous studies, this calculation was not derived using assumptions for body weight or volume of urine. Rather, ADIs were calculated for each study subject using their own body weight and 24-hr urine excretion. Samples were analyzed using an LC-MS/MS that was modified by the procedure of Jensen et al. (1), and 66.5% had neither no detectable glyphosate nor AMPA in urine. Glyphosate and/or AMPA was quantifiable detected in 8.3% of participants with a maximum glyphosate exposure of 0.63 µg/kg BW, which was 0.13% of the ADI. The maximum intake of AMPA + glyphosate corresponded to 0.16% of the ADI. This study also used 24-hr dietary recalls and did rank-order correlations to estimate food sources of glyphosate and AMPA. This was done based solely of the amount of food and not glyphosate content of the food. Nevertheless, they found that consumption of pulses and mushrooms were correlated with glyphosate and AMPA in urine, respectively. Absorbed glyphosate is not metabolized in the body suggesting that ingestion of AMPA per se, not glyphosate, was responsible for urinary AMPA. As a result of their study, the authors concluded that “based on the current risk assessment of glyphosate by EFSA, such exposure levels are not expected to pose any risk to human health. The detected associations with consuming certain foods are in line with reports on glyphosate and AMPA residues in food.” References 1. Jensen, P. K., Wujcik, C. E., McGuire, M. K., and McGuire, M. A. (2016) Validation of reliable and selective methods for direct determination of glyphosate and aminomethylphosphonic acid in milk and urine using LC-MS/MS. Journal of Environmental Science and Health. Part. B, Pesticides, Food Contaminants, and Agricultural Wastes 51, 254-259			
M-813446-01-1	Health risk assessment on the glyphosate exposure of knapsack sprayers.	Uengchuen, Kodchakorn; Chaiklang, Sunisa (correspondence)	Indian Journal of Public Health Research and Development, (March 2020) Vol. 11, No. 3, pp. 2088-2093. Refs: 24 ISSN: 0976-0245; E-ISSN: 0976-5506	Category B, Relevant but supplementary articles after detailed assessment	This article describes an assessment tool designed by the researchers to evaluate level of exposure based on PPE use, self-reported symptoms 6 months after use and frequency of use. They found that most farmers used PPE and had minimal symptoms such as burning eyes which may be due to the surfactant in formulations. There were no severe symptoms and no description of long-term outcomes. This descriptive article describes self-reported non-specific symptoms (nausea, headache, rash, burning eyes) in glyphosate users and should not affect the risk assessment / re-registration.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813486-01-1	Acute obstructive fibrinous laryngotracheobronchitis induced by severe glyphosate surfactant intoxication: A case report.	Yang Feng-Lu Lu Xiao	World journal of emergency medicine, (2020) Vol. 11, No. 2, pp. 125-126. Journal code: 101549691. ISSN: 1920-8642. L-ISSN: 1920-8642. Report No.: PMC-PMC7010532.	Category B, Relevant but supplementary articles after detailed assessment	This is a case report describing a patient who developed fibrinous tracheobronchitis after a suicide attempt with formulated glyphosate. Since the surfactant can cause corrosive injury and the patient had evidence of aspiration, this would be a possible side effect. Since this reflects a suicidal ingestion, it should not impact the risk assessment / re-registration.			
M-813491-01-1	Concentration Distribution and Analysis of Urinary Glyphosate and Its Metabolites in Occupationally Exposed Workers in Eastern China.	Zhang Feng; Xu Yanqiong; Liu Xin; Ding Enmin; Zhu Baoli Pan Liping Dou Jianrui Zhu Baoli	International journal of environmental research and public health, (20200424) Vol. 17, No. 8. Electronic Publication Date: 24 Apr 2020 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: PMC-PMC7215609.	Category B, Relevant but supplementary articles after detailed assessment	This study followed workers who were occupationally exposed to glyphosate in a manufacturing facility. They measured ambient air concentrations and then measured urinary concentrations of glyphosate and AMPA and found that the detection rates of glyphosate (>0.020mg/L) and AMPA (>0.010mg/L) were 86.6% (116/134) and 81.3% (109/134), respectively. The median values were 0.292 mg/L and 0.068 mg/L for urinary glyphosate and AMPA. There was variability in exposure based on where the worker was physically in the plant. This study was looking at biomarkers for exposure and makes no health claims regarding these exposures.			
M-813555-01-1	On recent meta-analyses of exposure to glyphosate and risk of non-Hodgkin's lymphoma in humans.	Kabat Geoffrey C Price William J Tarone Robert E	Cancer causes & control : CCC, (2021 Apr) Vol. 32, No. 4, pp. 409-414. Electronic Publication Date: 15 Jan 2021 Journal code: 9100846. E-ISSN: 1573-7225. L-ISSN: 0957-5243.	Category B, Relevant but supplementary articles after detailed assessment	The purpose of this meta-analysis seems to be to critique the Zhang et al. meta-analysis (Exposure to glyphosate-based herbicides and risk for non-Hodgkin lymphoma: a metaanalysis and supporting evidence. Mutat Res (2019) 781:186–206) and to provide a commentary on meta-analyses that combine results from observational studies of pesticides with different designs and different levels of analytic sophistication. The publication does not provide any primary data or improvement of the underlying studies' limitations and therefore is not informative with respect to possible glyphosate/NHL risk per se. The authors' points about the selective nature of the Zhang et al. (2019) meta-analysis seem valid as do the points about the unaddressed systematic errors in the case-control studies included in previous glyphosate meta-analyses.			
M-813501-01-1	Lessons for the clinical nephrologist: acute kidney injury by a glyphosate-surfactant herbicide.	Kimura Takahide; Suzuki Marie; Yokoyama Takeshi; Tanemoto Masayuki Kanetsuna Yukiko	Journal of nephrology, (2021 Feb 08) : Electronic Publication Date: 8 Feb 2021 Journal code: 9012268. E-ISSN: 1724-6059. L-ISSN: 1121-8428.	Category B, Relevant but supplementary articles after detailed assessment	This is a case report about an elderly patient who ingested a large volume of formulated glyphosate and presented with renal failure which improved with dialysis, which the patient was ultimately able to discontinue. They physicians obtained a kidney biopsy which showed vacuolization of the proximal tubules of the kidney which they suggest was related to the ingestion. Acute renal failure has been widely described in the literature following large ingestions of formulated glyphosate, however, most patients do not get kidney biopsies. This paper suggests that the associated renal failure is due to proximal tubular injury, which is not unexpected in these circumstances. Since this was a large intentional ingestion, it does not apply to agricultural use or practice.			
M-813558-01-1	Glyphosate poisoning - a case report.	Kunapareddy T Kalisetty S	Journal of postgraduate medicine, (2021 Jan-Mar) Vol. 67, No. 1, pp. 36-38. Journal code: 2985196R. E-ISSN: 0972-2823. L-ISSN: 0022-3859. Report No.: PMC-PMC8098880.	Category B, Relevant but supplementary articles after detailed assessment	This is a case report of a patient who intentionally ingested a large amount of formulated glyphosate in a suicide attempt and developed multiorgan failure requiring intensive supportive care and ultimate recovery. Cases such as these have been widely described in the literature and outcomes such as these are not unexpected. The reassuring part of this case is that despite the suicide attempt, the patient survived.			
M-813590-01-1	Exposure to glyphosate and risk of non-Hodgkin lymphoma: an updated meta-analysis.	Boffetta Paolo Ciocan Catalina; Pira Enrico Zunarelli Carlotta	La Medicina del lavoro, (2021 Jun 15) Vol. 112, No. 3, pp. 194-199. Electronic Publication Date: 15 Jun 2021 Journal code: 0401176. ISSN: 0025-7818. L-ISSN: 0025-7818. Report No.: PMC-PMC8223940.	Category B, Relevant but supplementary articles after detailed assessment	This is a review article, not primary research on a study population. The meta-analysis approach was standard. However, meta-analysis cannot correct for the validity limitations in the included studies, which precludes calculating a valid assessment of the possible relationship between glyphosate and non-Hodgkin's lymphoma.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813608-01-1	The relationship between pesticide exposure during critical neurodevelopment and autism spectrum disorder: A narrative review.	He Xiu; Tu Ying; Song Yawen Yang Guanghong You Mingdan	Environmental research, (2021 Aug 17) Vol. 203, pp. 111902. Electronic Publication Date: 17 Aug 2021 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Category B, Relevant but supplementary articles after detailed assessment	This is a narrative review article, not an epidemiologic study. There is no study design or study population per se. The two glyphosate epidemiology studies cited in this review involve very unlikely exposure scenarios. One study correlated increasing glyphosate use on crops with increases in the general population rate of autism. The second study defined exposure as proximity of the mother's residence on the birth certificate within a 2,000-meter radius of a glyphosate application recorded in the California Pesticide Use Reporting system. Even assuming the mother was home at the address on the birth certificate at the time of application, no one has ever demonstrated glyphosate exposure at appreciable distances from an application.			
M-813602-01-1	Urinary glyphosate concentration in pregnant women in relation to length of gestation.	Lesseur Corina; Swan Shanna H Pathak Khyatiben V; Pirrotte Patrick; Martinez Melissa N Ferguson Kelly K Barrett Emily S Nguyen Ruby H N Sathyanarayana Sheela Mandrioli Daniele Chen Jia	Environmental research, (2021 Jul 30) Vol. 203, pp. 111811. Electronic Publication Date: 30 Jul 2021 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Category B, Relevant but supplementary articles after detailed assessment	This study was not designed to study glyphosate per se. The authors took advantage of an ongoing study (TIDES) that had collected a 2nd trimester urine sample from pregnant women to evaluate a possible relationship between glyphosate (and AMPA) in urine and length of gestation and pre-term birth. Had the study been designed for glyphosate per se, it is unlikely that a single urine sample would have been planned as the basis for the analysis and other potential environmental exposures in urine or blood would have been assessed.			
M-813544-01-1	A systematic review and meta-analysis of occupational exposures and risk of follicular lymphoma	Odutola, Michael K.; Benke, Geza; Fritschi, Lin; Giles, Graham G.; van Leeuwen, Marina T.; Vajdic, Claire M.	Environmental Research, (2021) Vol. 197, pp. 110887. CODEN: ENVRAL. ISSN: 0013-9351.	Category B, Relevant but supplementary articles after detailed assessment	This is a review article of the literature for numerous exposures, including glyphosate, and follicular lymphoma. It is not primary data. The authors used standard meta-analysis routines. However, they had no ability to correct for limitations in the original studies.			
M-813583-01-1	Prenatal Exposure to Glyphosate and Its Environmental Degradate, Aminomethylphosphonic Acid (AMPA), and Preterm Birth: A Nested Case-Control Study in the PROTECT Cohort (Puerto Rico).	Silver Monica K; Fernandez Jennifer; Meeker John D Tang Jason; McDade Anna; Sabino Jason Rosario Zaira; Velez Vega Carmen Alshawabkeh Akram Cordero Jose F	Environmental health perspectives, (2021 May) Vol. 129, No. 5, pp. 57011. Electronic Publication Date: 19 May 2021 Journal code: 0330411. E-ISSN: 1552-9924. L-ISSN: 0091-6765. Report No.: PMC-PMC8132611.	Category B, Relevant but supplementary articles after detailed assessment	The authors took the opportunity to generate some data about glyphosate (and AMPA) and preterm birth from a cohort (PROTECT) study that was designed for other purposes than glyphosate per se. Adapting data from an ongoing study is efficient and it can be informative when the data collection from the ongoing study matches what would have been collected during a high-quality study of the question at hand. In most instances, however, the result is studies that have important limitations in study size or necessary information on personal factors and confounders.			
M-813502-01-1	Transient glyphosate encephalopathy due to a suicide attempt.	Yokoyama Saaya; Sugisaki Tomomi; Ryota Yoshida; Yoshiteru Sato; Okayasu Hiroaki; Yasui-Furukori Norio; Shimoda Kazutaka Sugisaki Tomomi Shioda Mukuto; Suzuki Keisuke	Neuropsychopharmacology reports, (2021 Sep) Vol. 41, No. 3, pp. 444-447. Electronic Publication Date: 6 Aug 2021 Journal code: 101719700. E-ISSN: 2574-173X. L-ISSN: 2574-173X. Report No.: PMC-PMC8411312.	Category B, Relevant but supplementary articles after detailed assessment	This is a case report of a man who developed a delayed encephalopathy characterized by confusion seizure activity and decreased perfusion of his left cerebral hemisphere on SPECT 3 days after a suicidal ingestion of formulated glyphosate. On initial presentation the patient was asymptomatic, underwent gastric lavage, which is not indicated in an asymptomatic patient, and was admitted to the psychiatric floor. 3 days later he was noted to have a delirium for which he was treated with mirtazapine. This was discontinued when symptoms grew progressively worse. The authors speculate that the cause of the encephalopathy was glyphosate. This is highly unlikely as glyphosate is not neurotoxic, nor does it cause vascular constriction. A unilateral perfusion deficit is very uncommon in a toxin induced encephalopathy. This case is much more consistent with acute alcohol withdrawal, which is a slow onset syndrome that takes 2-3 days to develop, is characterized by delirium and seizures, reversible vasogenic edema in the hippocampal regions. This presentation is not consistent with glyphosate overdoses and because of the suicidal ingestion should not impact regulatory decisions.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813120-01-1	Extreme hyperkalemia in a patient with a new glyphosate potassium herbicide poisoning: report of a case.	Bando Hiroki Murao Yoshinori; Aoyagi Ui; Hirakawa Akihiko; Iwase Masaaki; Nakatani Toshio	Chudoku kenkyu : Chudoku Kenkyukai jun kikanshi = The Japanese journal of toxicology. (2010 Sep) Vol. 23, No. 3, pp. 246-9. Journal code: 9310053. ISSN: 0914-3777. L-ISSN: 0914-3777.	Category B, Relevant but supplementary articles after detailed assessment	This case report describes severe hyperkalemia in the setting of suicidal ingestion of potassium salt glyhoate formulations. This is not unexpected.			
M-812350-01-1	Fatal poisoning with glyphosate-surfactant herbicide.	Beswick, E. (correspondence) Millo, J.	Journal of the Intensive Care Society, (January 2011) Vol. 12, No. 1, pp. 37-39. Refs: 23 ISSN: 1751-1437	Category B, Relevant but supplementary articles after detailed assessment	This is a case of a young man who deliberately ingested GlySH at home and rapidly developed multi-organ failure, culminating in his death. No new observations.			
M-812170-01-1	More Data on the Effect of Haemoperfusion for Acute Poisoning Is Required.	Chau, Anthony M. T.; Roberts, Darren M. [Reprint Author]	Blood Purification, (2011) Vol. 31, No. 1-3, pp. 41. CODEN: BLPUDO. ISSN: 0253-5068. E-ISSN: 1421-9735.	Category B, Relevant but supplementary articles after detailed assessment	letter to editor			
M-812347-01-1	Use of a lipid emulsion in a patient with refractory hypotension caused by glyphosate-surfactant herbicide.	Han Sang Kyoan Jeong Jinwoo; Yeom Seokran; Ryu Jiho; Park Sungwook	Clinical toxicology (Philadelphia, Pa.), (2010 Jul) Vol. 48, No. 6, pp. 566-8. Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	This is a case report of a suicidal ingestion of formulated glyphosate that was treated with lipid emulsion and improved. Since this is a description of medical management of a suicidal overdose, this should no impact reregistration			
M-813119-01-1	Glyphosate-surfactant herbicide-induced reversible encephalopathy.	Malhotra R C Ghia D K; Cordato D J; Beran R G	Journal of clinical neuroscience : official journal of the Neurosurgical Society of Australasia, (2010 Nov) Vol. 17, No. 11, pp. 1472-3. Electronic Publication Date: 23 Jul 2010 Journal code: 9433352. E-ISSN: 1532-2653. L-ISSN: 0967-5868.	Category B, Relevant but supplementary articles after detailed assessment	This paper describes prolonged encephalopathy in a suicidal glyphosate ingestion. There is no mention of the medication that was used for sedation while the patient was intubated in the ICU. Accumulations of lorazepam and other sedatives may result in prolonged coma. In formulated glyphosate overdose with multiorgan failure it is common to sedate patients until their hemodynamics improve. In the setting of suicidal overdose, this paper should not impact reregistration.			
M-812348-01-1	Predicting acute complicated glyphosate intoxication in the emergency department.	Moon Jeong Mi Chun Byeong Jo	Clinical toxicology (Philadelphia, Pa.), (2010 Aug) Vol. 48, No. 7, pp. 718-24. Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	The results of this study showed that age > 50 years, X-ray abnormalities, and ALT > 40 U/L were significant predictive factors for complications in patients with glyphosate surfactant herbicide poisoning; patients with these findings might require admission to the intensive care unit.			
M-813407-01-1	Incidence, etiology, and outcomes of rhabdomyolysis in a single tertiary referral center	Park, Jae-Seok; Seo, Min-Sook; Gil, Hyo-Wook; Yang, Jong-Oh; Lee, Eun-Young; Hong, Sae-Yong	Journal of Korean Medical Science, (2013) Vol. 28, No. 8, pp. 1194-1199. CODEN: JKMSEH. ISSN: 1011-8934.	Category B, Relevant but supplementary articles after detailed assessment	This article only mentions glyphosate in the reference section. One reference specifically discusses rhabdomyolysis with intramuscular injection of formulated glyphosate.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812344-01-1	A prospective observational study of the clinical toxicology of glyphosate-containing herbicides in adults with acute self-poisoning.	Roberts Darren M Buckley Nick A; Mohamed Fahim; Eddleston Michael; Goldstein Daniel A; Mehrsheikh Akbar; Bleeke Marian S; Dawson Andrew H	Clinical toxicology (Philadelphia, Pa.), (2010 Feb) Vol. 48, No. 2, pp. 129-36. Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650. Report No.: NLM-UKMS28248; PMC-PMC2875113; MID-UKMS28248.	Category B, Relevant but supplementary articles after detailed assessment	This paper is a prospective study of outcomes of suicidal ingestions of glyphosate based herbicides. It shows that the mortality rate from overdose is 3.2%. This paper supports the idea that low-toxicity pesticides have a lower mortality rate than higher toxicity products.	Y		
M-812351-01-1	Aseptic meningitis in association with glyphosate-surfactant herbicide poisoning.	Sato Chie Kamijo Yoshito; Yoshimura Kuniko; Ide Toshimitsu	Clinical toxicology (Philadelphia, Pa.), (2011 Feb) Vol. 49, No. 2, pp. 118-20. Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	This article evaluates the case of a woman who presented in multiorgan failure 2 days after a formulated glyphosate overdose. Meningitis was suspected and the patient was found to have a high level of glyphosate in the CSF. The claim is that glyphosate can cause aseptic meningitis and neurotoxicity. Glyphosate is hydrophilic and cannot cross cell membranes without active transport. It is well known that hypoxia and inflammatory changes can disrupt the tight junctions of the blood brain barrier which may allow passage of substances into the CSF. IL-6 is a known marker of inflammation. This is perhaps the mechanism through which they were able to measure glyphosate in the CSF. Since this paper is about a suicidal ingestion it should have no impact on reregistration.			
M-813142-01-1	Surfactant volume is an essential element in human toxicity in acute glyphosate herbicide intoxication.	Seok Su-Jin Park Jae-Seok; Hong Joong-Rock; Gil Hyo-Wook; Yang Jong-Oh; Lee Eun-Young; Song Ho-Yeon; Hong Sae-Yong	Clinical toxicology (Philadelphia, Pa.), (2011 Dec) Vol. 49, No. 10, pp. 892-9. Electronic Publication Date: 11 Nov 2011 Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	Results indicate that treatment of patients with acute glyphosate herbicide intoxication should take into account the volume and not the type of surfactants in herbicide formulations.			
M-813293-01-1	Elevated Urinary Glyphosate and Clostridia Metabolites With Altered Dopamine Metabolism in Triplets With Autistic Spectrum Disorder or Suspected Seizure Disorder: A Case Study.	Shaw William	Integrative medicine (Encinitas, Calif), (2017 Feb) Vol. 16, No. 1, pp. 50-57. Journal code: 101196303. ISSN: 1546-993X. L-ISSN: 1546-993X. Report No.: PMC-PMC5312745.	Category B, Relevant but supplementary articles after detailed assessment	This is a limited case study of 3 individuals, with minimal data on glyphosate exposure.			
M-572460-01-1	Early pregnancy agricultural pesticide exposures and risk of gastroschisis among offspring in the San Joaquin Valley of California	Shaw, Gary M.; Yang, Wei; Roberts, Eric; Kegley, Susan E.; Padula, Amy; English, Paul B.; Carmichael, Suzan L.	Birth Defects Research, Part A: Clinical and Molecular Teratology, (2014) Vol. 100, No. 9, pp. 686-694. CODEN: BDRPBT. ISSN: 1542-0752.	Category B, Relevant but supplementary articles after detailed assessment	No new information without clear relevance for the risk assessment.			
M-812152-01-1	Response to comments from Monsanto scientists on our study showing detection of glyphosate and Cry1Ab in blood of women with and without pregnancy	Aris, Aziz	Reproductive Toxicology, (2012) Vol. 33, No. 1, pp. 122-123. CODEN: REPTED. ISSN: 0890-6238.	Category B, Relevant but supplementary articles after detailed assessment	Correspondance with no new data.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813134-01-1	Control Effect of Occupational Hazards in Construction Project of Glyphosate Production	Dang, Qing-De; Wang, Kun; Hu, Yong-Chao; Wei, Lai	Chinese Journal of Public Health Engineering / Zhongguo Weisheng Gongcheng Xue. Vol. 10, no. 2, pp. 111-113. Mar 2011. ISSN: 1671-4199 Published by: Editorial Board of Chinese Journal of Public Health Engineering. [a No. 3145, Jingyang Road c Changchun	Category B, Relevant but supplementary articles after detailed assessment	This is a paper describing the evaluation of a glyphosate production facility and a description of how to mitigate risks of exposure to the chemistries involved in glyphosate production.			
M-812381-01-1	Aris and Leblanc "Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada. Comment	Goldstein, Daniel A.; Dubelman, Samuel; Grothaus, David; Hammond, Bruce G.	Reproductive Toxicology, (2012) Vol. 33, No. 1, pp. 120-121. CODEN: REPTED. ISSN: 0890-6238.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-813266-01-1	Australian work exposures studies: occupational exposure to pesticides.	Jomichen Jasmine; El-Zaemey Sonia; Carey Renee N; Darcey Ellie; Reid Alison; Fritschi Lin Jomichen Jasmine; Heyworth Jane S; Peters Susan Glass Deborah C; Abramson Michael Driscoll Tim	Occupational and environmental medicine, (20170100) Vol. 74, No. 1, pp. 46-51. Electronic Publication Date: 8 Sep 2016 Journal code: 9422759. E-ISSN: 1470-7926. L-ISSN: 1351-0711.	Category B, Relevant but supplementary articles after detailed assessment	Occupational exposure survey.			
M-813297-01-1	Biomonitoring of Danish school children and mothers including biomarkers of PBDE and glyphosate.	Knudsen Lisbeth E; Hansen Pernille Winton; Mizrak Seher; Hansen Heidi K; Morck Thit A; Nielsen Flemming; Siersma Volkert; Mathiesen Line	Reviews on environmental health, (2017 Sep 26) Vol. 32, No. 3, pp. 279-290. Journal code: 0425754. E-ISSN: 2191-0308. L-ISSN: 0048-7554.	Category B, Relevant but supplementary articles after detailed assessment	All glyphosate levels many orders of magnitude lower than the ADI.			
M-813159-01-1	Glyphosate exposure in a farmer's family.	Mesnage, R.; Moesch, C.; Grand, R. le; Lauthier, G.; Vendomois, J. S. de; Gress, S.; Seralini, G. E.; le Grand, R.; de Vendomois, J. S.	Journal of Environmental Protection (2012), Volume 3, Number 9, pp. 1001-1003, 13 refs. ISSN: 2152-2197 Published by: Scientific Research Publishing, Irvine URL (Availability): http://www.scirp.org/journal/PaperInformation.aspx?paperID=22645	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate measured in urine of farmer and family.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812487-01-1	Erratum: Excretion of the herbicide glyphosate in older adults between 1993 and 2016 (JAMA - Journal of the American Medical Association (2017) 318:16 (1610-1611) DOI: 10.1001/jama.2017.11726).	Mills et al.	JAMA - Journal of the American Medical Association, (3 Apr 2018) Vol. 319, No. 13, pp. 1386. ISSN: 0098-7484; E-ISSN: 1538-3598 CODEN: JAMAAP	Category B, Relevant but supplementary articles after detailed assessment	Erratum listing undisclosed conflicts of interest on a previous paper (Mills_2017).			
M-812427-01-1	Excretion of the Herbicide Glyphosate in Older Adults Between 1993 and 2016.	Mills Paul J; Laughlin Gail A Kania-Korwel Izabela; Fagan John McEvoy Linda K Barrett-Connor Elizabeth	JAMA, (20171024) Vol. 318, No. 16, pp. 1610-1611. Journal code: 7501160. E-ISSN: 1538-3598. L-ISSN: 0098-7484. Report No.: PMC-PMC5818803.	Category B, Relevant but supplementary articles after detailed assessment	Not relevant for EU toxicology risk assessment but supplementary information on human exposure.			
M-812370-01-1	Comment on "Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada" by A. Aris and S. Leblanc [Reprod. Toxicol. 31 (2011) 528-533]	Mueller, Utz; Gorst, Janet	Reproductive Toxicology, (2012) Vol. 33, No. 3, pp. 401-402. CODEN: REPTED. ISSN: 0890-6238.	Category B, Relevant but supplementary articles after detailed assessment	Letter to Editor			
M-812447-01-1	Analysis of Moms Across America report suggesting bioaccumulation of glyphosate in U.S. mother's breast milk: Implausibility based on inconsistency with available body of glyphosate animal toxicokinetic, human biomonitoring, and physico-chemical data.	Bus James S	Regulatory toxicology and pharmacology : RTP, (2015 Dec) Vol. 73, No. 3, pp. 758-64. Electronic Publication Date: 28 Oct 2015 Journal code: 8214983. E-ISSN: 1096-0295. L-ISSN: 0273-2300.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-812233-01-1	The qSOFA Score: A Simple and Accurate Predictor of Outcome in Patients with Glyphosate Herbicide Poisoning.	Cho Yong Soo; Chun Byeong Jo; Moon Jeong Mi	Basic & clinical pharmacology & toxicology, (2018 Nov) Vol. 123, No. 5, pp. 615-621. Electronic Publication Date: 11 Sep 2018 Journal code: 101208422. E-ISSN: 1742-7843. L-ISSN: 1742-7835.	Category B, Relevant but supplementary articles after detailed assessment	This study is describing the use of a scoring system to predict severity of outcome after patients present with a formulated glyphosate overdose. This is meant to guide clinical practice and should not impact re-registration			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812221-01-1	Occupational koebnerization of psoriasis caused by glyphosate.	Elsner Peter; Darr-Foit Susanne; Schliemann Sibylle	Journal der Deutschen Dermatologischen Gesellschaft = Journal of the German Society of Dermatology : JDDG, (2018 Jan) Vol. 16, No. 1, pp. 70-71. Electronic Publication Date: 12 Dec 2017 Journal code: 101164708. E-ISSN: 1610-0387. L-ISSN: 1610-0379.	Category B, Relevant but supplementary articles after detailed assessment	There is not a mechanism for glyphosate to cause psoriasis, especially 1 week post exposure.			
M-813461-01-1	Parkinsonism Relating to Intoxication with Glyphosate.	Eriguchi Makoto; Iida Kotaro; Ikeda Shuhei; Hara Hideo Osoegawa Manabu Nishioka Kenya; Hattori Nobutaka Nagayama Hiroshi	Internal medicine (Tokyo, Japan), (2019 Jul 01) Vol. 58, No. 13, pp. 1935-1938. Electronic Publication Date: 25 Feb 2019 Journal code: 9204241. E-ISSN: 1349-7235. L-ISSN: 0918-2918.	Category B, Relevant but supplementary articles after detailed assessment	(Reversible) Parkinsonism in case of acute in-toxication is a well-known effect and not specific for glyphosate.			
M-812198-01-1	"Reversible Parkinsonism" following glyphosate exposure.	Goldstein, Daniel A. (correspondence); Dunn, S. Eliza; Karberg, Katherine	Parkinsonism and Related Disorders, (November 2018) Vol. 56, pp. 107. Refs: 3 ISSN: 1353-8020; E-ISSN: 1873-5126 CODEN: PRDIFO	Category B, Relevant but supplementary articles after detailed assessment	Letter ref to Zheng_2018			
M-813195-01-1	Glyphosate, hard water and nephrotoxic metals: are they the culprits behind the epidemic of chronic kidney disease of unknown etiology in Sri Lanka?.	Jayasumana Channa Gunatilake Sarath Senanayake Priyantha	International journal of environmental research and public health, (2014 Feb 20) Vol. 11, No. 2, pp. 2125-47. Electronic Publication Date: 20 Feb 2014 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: NLM-PMC3945589; PMC-PMC39455	Category B, Relevant but supplementary articles after detailed assessment	Presents a hypothesis which is not tested, only discussed.			
M-813232-01-1	Simultaneous exposure to multiple heavy metals and glyphosate may contribute to Sri Lankan agricultural nephropathy.	Jayasumana Channa Gunatilake Sarath Siribaddana Sisira	BMC nephrology, (2015 Jul 11) Vol. 16, pp. 103. Electronic Publication Date: 11 Jul 2015 Journal code: 100967793. E-ISSN: 1471-2369. L-ISSN: 1471-2369. Report No.: NLM-PMC4499177; PMC-PMC4499177.	Category B, Relevant but supplementary articles after detailed assessment	Presents a hypothesis which is not tested, only discussed			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812193-01-1	Glyphosate levels in older adults.	Karberg, Katherine, MD, PhD (correspondence); Goldstein, Daniel; Dunn, S. Eliza	JAMA - Journal of the American Medical Association, (3 Apr 2018) Vol. 319, No. 13, pp. 1384-1385. Refs: 5 ISSN: 0098-7484; E-ISSN: 1538-3598 CODEN: JAMAAP	Category B, Relevant but supplementary articles after detailed assessment	Medical data which should not impact the re-registration.			
M-813421-01-1	Glyphosate poisoning with acute fulminant hepatic failure.	Khot, Rajashree (correspondence); Bhise, Ameya; Joshi, Rakhee; Ambade, Nilima Patil	Asia Pacific Journal of Medical Toxicology, (Summer 2018) Vol. 7, No. 3, pp. 86-88. Refs: 10 ISSN: 2322-2611; E-ISSN: 2322-4320	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate is not hepatotoxic by any route.			
M-812268-01-1	Increased severity associated with tallowamine in acute glyphosate poisoning.	Langrand Jerome; Blanc-Brisset Ingrid; Garnier Robert; Blanc-Brisset Ingrid; Boucaud-Maitre Denis; Puskarczyk Emmanuel; Nisse Patrick; Pulce Corine	Clinical toxicology (Philadelphia, Pa.), (2019 Jun 06) pp. 1-3. Electronic Publication Date: 6 Jun 2019 Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	In this study, severe respiratory symptoms were also more frequently reported in the TA group. The surfactant properties of POEA are likely to cause aspiration pneumonitis which is a plausible explanation for the respiratory failure complicating severe GBF poisoning cases.			
M-813338-01-1	Hemodynamic changes after infusion of intravenous lipid emulsion to treat refractory hypotension caused by glyphosate-surfactant herbicide poisoning A case report.	Lee, Min-Jeong; Min, Young Gi [Reprint Author]	Medicine (Hagerstown), (JAN 2019) Vol. 98, No. 3, pp. Article No.: e14156. http://journals.lww.com/md-journal/pages/default.aspx . CODEN: MEDIAV. ISSN: 0025-7974. E-ISSN: 1536-5964.	Category B, Relevant but supplementary articles after detailed assessment	This is an article describing the use of lipid emulsion in a suicidal overdose of formulated glyphosate. This has been well described in the literature as a possible intervention in critically ill patients.			
M-813174-01-1	Severe adverse effects related to dermal exposure to a glyphosate-surfactant herbicide.	Mariager T P; Madsen P V; Ebbehøj N E; Schmidt B; Juhl A	Clinical toxicology (Philadelphia, Pa.), (2013 Feb) Vol. 51, No. 2, pp. 111-3. Electronic Publication Date: 30 Jan 2013 Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	No new effects are discussed in the publication. Adverse effects of formulations in case of dermal exposure are well known. The data should not impact the re-registration.	Y		

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812262-01-1	Glyphosate Excretion is Associated With Steatohepatitis and Advanced Liver Fibrosis in Patients With Fatty Liver Disease.	Mills Paul J Caussy Cyrielle Loomba Rohit	Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association, (2019 Apr 04) . Electronic Publication Date: 4 Apr 2019 Journal code: 101160775. E-ISSN: 1542-7714. L-ISSN: 1542-3565.	Category B, Relevant but supplementary articles after detailed assessment	No new information without clear relevance for the risk assessment. This paper should not impact the re-registration.			
M-809252-01-1	Undisclosed conflicts of interest	Mills, Paul J., PhD (correspondence) Fagan, John	JAMA - Journal of the American Medical Association, (3 Apr 2018) Vol. 319, No. 13, pp. 1385-1386. Refs: 1 ISSN: 0098-7484; E-ISSN: 1538-3598 CODEN: JAMAAP	Category B, Relevant but supplementary articles after detailed assessment	Correction to Mills et al 2017			
M-812208-01-1	Cardiovascular Effects and Fatality May Differ According to the Formulation of Glyphosate Salt Herbicide.	Moon Jeong Mi; Chun Byeong Jo; Cho Yong Soo; Lee Sung Do; Jung Eu Jene; Ryu Hyun Ho Hong Young Joon Shin Min Ho	Cardiovascular toxicology, (20180200) Vol. 18, No. 1, pp. 99-107. Journal code: 101135818. E-ISSN: 1559-0259. L-ISSN: 1530-7905.	Category B, Relevant but supplementary articles after detailed assessment	Preliminary results without investigation of other factors contributing to such effects.			
M-812443-01-1	A critical review of glyphosate findings in human urine samples and comparison with the exposure of operators and consumers.	Niemann, L.; Sieke, C.; Pfeil, R.; Solecki, R.	Journal fuer Verbraucherschutz und Lebensmittelsicherheit/Journal of Consumer Protection and Food Safety (2015), Volume 10, Number 1, pp. 3-12, 22 refs. ISSN: 1661-5751	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-812354-01-1	Rapture of the large intestine caused by severe oral glyphosate-surfactant intoxication.	Palli Eleni; Makris Demosthenes; Diakaki Chrysi; Garoufalas Grigorios; Zakynthinos Epaminondas	The American journal of emergency medicine, (2011 May) Vol. 29, No. 4, pp. 459-60. Electronic Publication Date: 5 Feb 2011 Journal code: 8309942. E-ISSN: 1532-8171. L-ISSN: 0735-6757.	Category B, Relevant but supplementary articles after detailed assessment	This article describes corrosive injury to the transverse colon in a suicidal ingestion of formulated glyphosate. This is known to occur in suicidal overdoses and should not impact reregistration			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813305-01-1	Glyphosate Residues in Groundwater, Drinking Water and Urine of Subsistence Farmers from Intensive Agriculture Localities: A Survey in Hopelchen, Campeche, Mexico.	Rendon-von Osten Jaime; Dzul-Caamal Ricardo	International journal of environmental research and public health, (20170603) Vol. 14, No. 6. Electronic Publication Date: 3 Jun 2017 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: PMC-PMC5486281.	Category B, Relevant but supplementary articles after detailed assessment	No new information without clear relevance for the risk assessment			
M-813415-01-1	Incident thyroid disease in female spouses of private pesticide applicators.	Shrestha, Srishti; Parks, Christine G.; Kamel, Freya; Sandler, Dale P. (correspondence) Goldner, Whitney S. Umbach, David M. Ward, Mary H.; Lerro, Catherine C.; Koutros, Stella; Hofmann, Jonathan N.; Beane Freeman, Laura E.	Environment International, (September 2018) Vol. 118, pp. 282-292. Refs: 53 ISSN: 0160-4120; E-ISSN: 1873-6750 CODEN: ENVIDV	Category B, Relevant but supplementary articles after detailed assessment	Very superficial information about exposure to specific pesticides.			
M-812190-01-1	Glyphosate in the general population and in applicators: a critical review of studies on exposures.	Solomon Keith R	Critical reviews in toxicology, (2016 Sep) Vol. 46, No. sup1, pp. 21-27. Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-812224-01-1	Reversible Parkinsonism induced by acute exposure glyphosate.	Zheng Qian; Yin Jianhong; Zhu Lina Jiao Ling; Xu Zhu	Parkinsonism & related disorders, (20180500) Vol. 50, pp. 121. Electronic Publication Date: 31 Jan 2018 Journal code: 9513583. E-ISSN: 1873-5126. L-ISSN: 1353-8020.	Category B, Relevant but supplementary articles after detailed assessment	Reversible Parkinsonism in case of acute in-toxication is a well-known effect and not specific for glyphosate.			
M-812199-01-1	Reply for the comment on "Reversible Parkinsonism induced by acute exposure glyphosate".	Zheng, Qian; Yin, Jianhong; Zhu, Lina; Jiao, Ling (correspondence); Xu, Zhu	Parkinsonism and Related Disorders, (November 2018) Vol. 56, pp. 108. Refs: 4 ISSN: 1353-8020; E-ISSN: 1873-5126 CODEN: PRDIFO	Category B, Relevant but supplementary articles after detailed assessment	Letter to the editor.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-806110-01-1	Urinary pesticide concentrations among children, mothers and fathers living in farm and non-farm households in Iowa.	Curwin Brian D; Hein Misty J; Sanderson Wayne T; Striley Cynthia; Heederik Dick; Kromhout Hans; Reynolds Stephen J; Alavanja Michael C	The Annals of occupational hygiene, (2007 Jan) Vol. 51, No. 1, pp. 53-65. Electronic Publication Date: 19 Sep 2006	Category B, Relevant but supplementary articles after detailed assessment	Biomonitoring in Urine of farmer children, concentration in urine samples is only reported, likely not relevant or only supportive. Not relevant information for risk assessment but relevant for the dossier.	Y		
M-812191-01-1	Glyphosate epidemiology expert panel review: a weight of evidence systematic review of the relationship between glyphosate exposure and non-Hodgkin's lymphoma or multiple myeloma.	Acquavella John Garabrant David Marsh Gary Sorahan Tom Weed Douglas L	Critical reviews in toxicology, (2016 Sep) Vol. 46, No. suppl, pp. 28-43. Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-813291-01-1	Occupational, dietary, and other risk factors for myelodysplastic syndromes in Western Greece.	Avgerinou Christina; Giannezi Ioanna; Theodoropoulou Stela; Lazaris Vasileios; Kolliopoulou Georgia; Symeonidis Argiris Avgerinou Christina; Alamanos Yannis; Leotsinidis Michalis Zikos Panagiotis	Hematology (Amsterdam, Netherlands), (2017 Aug) Vol. 22, No. 7, pp. 419-429. Electronic Publication Date: 19 Jan 2017 Journal code: 9708388. E-ISSN: 1607-8454. L-ISSN: 1024-5332.	Category B, Relevant but supplementary articles after detailed assessment	No A case-control study with unblinded interviewers is compromised both by potential recall bias and interviewer bias.			
M-813198-01-1	Pesticide exposure and depression among male private pesticide applicators in the agricultural health study.	Beard, John D. Beard, John D.; Hoppin, Jane A.; Sandler, Dale P.; Kamel, Freya (correspondence) Umbach, David M. Richards, Marie Alavanja, Michael C. R.; Blair, Aaron Kamel, Freya (correspondence)	Environmental Health Perspectives, (September 2014) Vol. 122, No. 9, pp. 984-991. Refs: 29 ISSN: 0091-6765; E-ISSN: 1552-9924	Category B, Relevant but supplementary articles after detailed assessment	No statistically significant findings for glyphosate.			
M-812153-01-1	Pesticide exposure and self-reported incident depression among wives in the Agricultural Health Study	Beard, John D.; Hoppin, Jane A.; Richards, Marie; Alavanja, Michael C. R.; Blair, Aaron; Sandler, Dale P.; Kamel, Freya	Environmental Research, (2013) Vol. 126, pp. 31-42. CODEN: ENVRAL. ISSN: 0013-9351.	Category B, Relevant but supplementary articles after detailed assessment	No statistically significant findings for glyphosate.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813458-01-1	Estimated Residential Exposure to Agricultural Chemicals and Premature Mortality by Parkinson's Disease in Washington State.	Caballero Mariah Amiri Solmaz; Monsivais Pablo; Amram Ofer Denney Justin T Hystad Perry Amram Ofer	International journal of environmental research and public health, (2018)12(16) Vol. 15, No. 12. Electronic Publication Date: 16 Dec 2018 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: PMC-PMC6313412.	Category B, Relevant but supplementary articles after detailed assessment	Unproven exposure. Uncertain temporal relationship between purported exposure and the health outcome. A proper design would evaluate exposure or non-exposure from Parkinson's diagnosis and compare length of survival by exposure category.			
M-812285-01-1	Correlation between CYP1A1 polymorphisms and susceptibility to glyphosate-induced reduction of serum cholinesterase: A case-control study of a Chinese population.	Cai Wenyao Zhang Feng; Zhong Lixin; Zhang Hengdong Chen Dongya Guo Haoran Zhu Baoli; Liu Xin	Pesticide biochemistry and physiology, (2020 Jan) Vol. 162, pp. 23-28. Electronic Publication Date: 29 Aug 2019 Journal code: 1301573. E-ISSN: 1095-9939. L-ISSN: 0048-3575.	Category B, Relevant but supplementary articles after detailed assessment	Untenable assumption for the genetic analyses: that ChE depression (viz., case status) is related to glyphosate. Note that ChE depression is not more likely among those with longest glyphosate employment tenure. Adequate description of study population Uncertain. Selection process not clearly described. Adequate description of exposure circumstances Uncertain. Description of workplaces lacking. Subjects could have worked primarily in producing raw materials.			
M-812453-01-1	Systematic review and meta-analysis of glyphosate exposure and risk of lymphohematopoietic cancers.	Chang Ellen T; Delzell Elizabeth Chang Ellen T	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2016) Vol. 51, No. 6, pp. 402-34. Electronic Publication Date: 25 Mar 2016 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234. Report	Category B, Relevant but supplementary articles after detailed assessment	The glyphosate meta-RRs took the results from the available studies at face value. The authors had no way to correct for recall bias, confounding, etc. Therefore, the meta-RRs are in error to the extent that the studies included in the meta-analysis are in error. Chang and Delzell (2016) are clear on this point in their meta-analysis article. Accordingly, p values and confidence intervals for the meta-RRs cannot be taken at face value because they incorporate systematic error or bias. Thus, the argument about the statistical significance (or not) of the meta-RR for glyphosate is inconsequential. You cannot calculate a valid p value when there is uncontrolled systematic error (Greenland S. Randomization, statistics, and causal inference. Epidemiology 1990; 1:421-429).			
M-813413-01-1	Pesticide exposure, tobacco use, poor self-perceived health and presence of chronic disease are determinants of depressive symptoms among coffee growers from Southeast Brazil	Conti, Catarine Lima (correspondence); Barbosa, Wagner Miranda; Alvares-da-Silva, Adriana Madeira Simao, Joao Batista Pavesi Conti, Catarine Lima (correspondence)	Psychiatry Research, (February 2018) Vol. 260, pp. 187-192. Refs: 64 ISSN: 0165-1781; E-ISSN: 1872-7123 CODEN: PSRSDR	Category B, Relevant but supplementary articles after detailed assessment	Study is fraught with limitations including a very poor statistical analysis.			
M-813285-01-1	Occupational exposure to pesticides, reproductive hormone levels and sperm quality in young Brazilian men	Cremonese, Cleber; Piccoli, Camila; Pasqualotto, Fabio; Clapauch, Ruth; Koifman, Rosalina Jorge; Koifman, Sergio; Freire, Carmen	Reproductive Toxicology, (2017) Vol. 67, pp. 174-185. CODEN: REPTED. ISSN: 0890-6238.	Category B, Relevant but supplementary articles after detailed assessment	Due to exposure/outcome temporal ambiguity and failure to control for other exposures in the evaluation of specific exposures.			
M-813259-01-1	Glyphosate and adverse pregnancy outcomes, a systematic review of observational studies.	de Araujo Jessica S A; Delgado Isabella F Paumgarten Francisco J R	BMC public health, (2016)606 Vol. 16, pp. 472. Electronic Publication Date: 6 Jun 2016 Journal code: 100968562. E-ISSN: 1471-2458. L-ISSN: 1471-2458. Report No.: NLM-PMC4895883; PMC-PMC4895883.	Category B, Relevant but supplementary articles after detailed assessment	Review of literature			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812188-01-1	Environmental factors influencing the link between childhood ADHD and risk of adult coronary artery disease.	Fluegge, Keith (correspondence) Fluegge, Keith (correspondence)	Medical Hypotheses, (January 2018) Vol. 110, pp. 83-85. Refs: 32 ISSN: 0306-9877; E-ISSN: 1532-2777 CODEN: MEHYDY	Category B, Relevant but supplementary articles after detailed assessment	No new information without clear relevance for the risk assessment.			
M-813253-01-1	Glyphosate Use Predicts Healthcare Utilization for ADHD in the Healthcare Cost and Utilization Project net (HCUPnet): A Two-Way Fixed-Effects Analysis.	Fluegge, Keith [Reprint Author]; Fluegge, Kyle	Polish Journal of Environmental Studies, (2016) Vol. 25, No. 4, pp. 1489-1503. http://www.pjoes.com . ISSN: 1230-1485. E-ISSN: 2083-5906.	Category B, Relevant but supplementary articles after detailed assessment	No new information without clear relevance for the risk assessment. No evidence or estimation of glyphosate exposure to individual patients. focused on state-level data for ADHD hospital discharge diagnoses and corresponding information about glyphosate use, nitrogen fertilizer use, and industrial and food use of maize, plus associated N2O emissions.			
M-813243-01-1	Occupational Exposure to Pesticides With Occupational Sun Exposure Increases the Risk for Cutaneous Melanoma	Fortes Cristina Mastroeni Simona; Segatto M Marjorie; Hohmann Clarissa; Miligi Lucia; Bakos Lucio; Bonamigo Renan	Journal of occupational and environmental medicine, (2016 Apr) Vol. 58, No. 4, pp. 370-5. Journal code: 9504688. E-ISSN: 1536-5948. L-ISSN: 1076-2752.	Category B, Relevant but supplementary articles after detailed assessment	No specific analyses for glyphosate. Interviewers were not blinded. Recall bias may produce spurious positive associations. Confounding not addressed adequately			
M-530630-01-1	Hypothyroidism and Pesticide Use Among Male Private Pesticide Applicators in the Agricultural Health Study	Goldner, Whitney S.; Sandler, Dale P.; Yu, Fang; Shostrom, Valerie; Hoppin, Jane A.; Kamel, Freya; LeVan, Tricia D.	Journal of Occupational and Environmental Medicine, (2013) Vol. 55, No. 10, pp. 1171-1178. CODEN: JOEMFM. ISSN: 1076-2752.	Category B, Relevant but supplementary articles after detailed assessment	No correlation between effects and glyphosate use.			
M-813107-01-1	Exacerbation of symptoms in agricultural pesticide applicators with asthma.	Henneberger Paul K; Liang Xiaoming; London Stephanie J; Umbach David M; Sandler Dale P; Hoppin Jane A	International archives of occupational and environmental health, (2014 May) Vol. 87, No. 4, pp. 423-32. Electronic Publication Date: 14 May 2013 Journal code: 7512134. E-ISSN: 1432-1246. L-ISSN: 0340-0131. Report No.: PMC-PMC4089194; MID-NIHMS594421.	Category B, Relevant but supplementary articles after detailed assessment	No adverse effects correlating with glyphosate use.			
M-812341-01-1	Pesticides are Associated with Allergic and Non-Allergic Wheeze among Male Farmers.	Hoppin Jane A; Umbach David M; Long Stuart; London Stephanie J; Henneberger Paul K; Blair Aaron; Alavanja Michael; Freeman Laura E Beane; Sandler Dale P	Environmental health perspectives, (20170400) Vol. 125, No. 4, pp. 535-543. Electronic Publication Date: 6 Jul 2016 Journal code: 0330411. E-ISSN: 1552-9924. L-ISSN: 0091-6765. Report No.: PMC-PMC5381985.	Category B, Relevant but supplementary articles after detailed assessment	The exposure and outcome data were concurrent, so a temporal relationship could not be established. The extraordinary number of positive statistically significant findings mitigates against interpreting any one finding as likely to be causal.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813474-01-1	Thyroid Hormones in Conventional and Organic Farmers in Thailand.	Kongtip Pornpimol; Kallayanatham Nichcha Kongtip Pornpimol Nankongnab Noppanun; Pundee Ritthirong Choochouy Nattagorn Yimsabai Jutharak Woskie Susan	International journal of environmental research and public health, (20190729) Vol. 16, No. 15. Electronic Publication Date: 29 Jul 2019 Journal code: 101238455. E-ISSN: 1660-4601. L-ISSN: 1660-4601. Report No.: PMC-PMC6695996.	Category B, Relevant but supplementary articles after detailed assessment	The higher incidence of thyroid disease in women (more numerous in organic farming), no data on the menopausal status of the women (change in thyroid hormones), the collection of data with dairies of the farmers may be incomplete, the exposure of farmers to pesticides prior to the study and prior to starting organic farming, and the results for glyphosate should have been examined for confounding from other pesticides that were correlated with glyphosate use. Moreover, the use rate and bioavailability (Acquavella et al. (2004) Environmental Health Perspectives Vol. 112(3), 321-326; Acquavella et al. (2006) Epidemiology, Vol. 17(1), 69-74) of glyphosate was lower than that of the other pesticides used. Since the determination of serum thyroid hormone levels is key in this study, the methods of analysis should have been better documented.			
M-812156-01-1	Pesticide Exposures and Body Mass Index (BMI) of Pesticide Applicators From the Agricultural Health Study	LaVerda, Nancy L.; Goldsmith, David F.; Alavanja, Michael C. R.; Hunting, Katherine L.	Journal of Toxicology and Environmental Health, Part A: Current Issues, (2015) Vol. 78, No. 20, pp. 1255-1276. CODEN: JTEHF8. ISSN: 1528-7394.	Category B, Relevant but supplementary articles after detailed assessment	No relevant endpoint for risk assessment.			
M-812157-01-1	Pesticide exposure and end-stage renal disease risk among wives of pesticide applicators in the Agricultural Health Study	Lebov, Jill F.; Engel, Lawrence S.; Richardson, David; Hogan, Susan L.; Sandler, Dale P.; Hoppin, Jane A.	Environmental Research, (2015) Vol. 143, No. Part_A, pp. 198-210. CODEN: ENVRL. ISSN: 0013-9351.	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate was not associated with ESRD, but this study did not have the detail necessary to provide reliable information. Mostly speculative information about exposure to glyphosate and other pesticides.			
M-812259-01-1	Pesticide use and risk of non-Hodgkin lymphoid malignancies in agricultural cohorts from France, Norway and the USA: a pooled analysis from the AGRICOH consortium.	Leon Maria E; Schinasi Leah H; Ferro Gilles; Schuz Joachim Schinasi Leah H Lebailly Pierre; Tual Severine Beane Freeman Laura E; Hofmann Jonathan N; Koutros Stella Nordby Karl-Christian; Kristensen Petter Monnerau Alain Monnerau Alain Brouwer Maartje; K	International journal of epidemiology, (20190318) . Electronic Publication Date: 18 Mar 2019 Journal code: 7802871. E-ISSN: 1464-3685. L-ISSN: 0300-5771.	Category B, Relevant but supplementary articles after detailed assessment	Due to an error prone exposure methodology and the attendant inability to control confounding. We also note that the results for the Norwegian cohort conflict with the AHS results where exposure is determined much more specifically and where there is no relationship between glyphosate and DLBCL among individuals in the highest exposed quartile (108 days).			
M-769007-01-1	Prenatal Exposure to Ambient Pesticides and Preterm Birth and Term Low Birthweight in Agricultural Regions of California.	Ling Chenxiao; Liew Zeyan; von Ehrenstein Ondine S; Heck Julia E; Park Andrew S; Cui Xin; Ritz Beate von Ehrenstein Ondine S Cockburn Myles Cockburn Myles Cockburn Myles Wu Jun	Toxics, (2018 Jul 21) Vol. 6, No. 3. Electronic Publication Date: 21 Jul 2018 Journal code: 101639637. E-ISSN: 2305-6304. L-ISSN: 2305-6304. Report No.: PMC-PMC6160921.	Category B, Relevant but supplementary articles after detailed assessment	Unproven assumption that residence near land treated with pesticides equates to meaningful exposure. Glyphosate biomonitoring would suggest that is highly implausible. Also, residence on birth certificates is an uncertain indicator of residential proximity to treated land during pregnancy.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812356-01-1	Epidemiologic studies of glyphosate and non-cancer health outcomes: a review.	Mink Pamela J Mandel Jack S; Lundin Jessica I; Scurman Bonnielin K	Regulatory toxicology and pharmacology : RTP, (2011 Nov) Vol. 61, No. 2, pp. 172-84. Electronic Publication Date: 21 Jul 2011 Journal code: 8214983. E-ISSN: 1096-0295. L-ISSN: 0273-2300.	Category B, Relevant but supplementary articles after detailed assessment	This is an epidemiology review article on non-cancer endpoints.			
M-812366-01-1	Epidemiologic studies of glyphosate and cancer: a review.	Mink Pamela J Mandel Jack S; Scurman Bonnielin K; Lundin Jessica I	Regulatory toxicology and pharmacology : RTP, (2012 Aug) Vol. 63, No. 3, pp. 440-52. Electronic Publication Date: 7 Jun 2012 Journal code: 8214983. E-ISSN: 1096-0295. L-ISSN: 0273-2300.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-812150-01-1	[Epidemiological study of glyphosate herbicide poisoning]..	Mise, Masashi (correspondence)	Chudoku kenkyu : Chudoku Kenkyukai jun kikanshi = The Japanese journal of toxicology, (Mar 2011) Vol. 24, No. 1, pp. 69-72. ISSN: 0914-3777	Category B, Relevant but supplementary articles after detailed assessment	Epidemiological analysis of acute poisoning cases due to oral ingestion of glyphosate (suicide attempts), clinical symptoms such as metabolic acidosis, Hyperkalemia, electrocardiogram abnormalities are known effects and should not impact the re-registration.			
M-813260-01-1	Rheumatoid Arthritis in Agricultural Health Study Spouses: Associations with Pesticides and Other Farm Exposures.	Parks Christine G Hoppin Jane A; De Roos Anneclaire J; Costenbader Karen H; Alavanja Michael C; Sandler Dale P	Environmental health perspectives, (2016 Nov) Vol. 124, No. 11, pp. 1728-1734. Electronic Publication Date: 10 Jun 2016 Journal code: 0330411. E-ISSN: 1552-9924. L-ISSN: 0091-6765. Report No.: PMC-PMC5089872.	Category B, Relevant but supplementary articles after detailed assessment	Lack of information about glyphosate frequency of use and timing of use.			
M-813350-01-1	Glyphosate exposure in pregnancy and shortened gestational length: a prospective Indiana birth cohort study	Parvez, S.; Geron, R. R.; Proctor, C.; Friesen, M.; Ashby, J. L.; Reiter, J. L.; Lui, Z.; Winchester, P. D.	Environmental Health (London, United Kingdom), (2018) Vol. 17, pp. 23/1-23/12. CODEN: EHAGAB. ISSN: 1476-069X.	Category B, Relevant but supplementary articles after detailed assessment	Small study. Uncertain exposure characterization. Premature births were 1 of 5 for those with glyphosate < LOD and 1 of 66 for those with glyphosate > LOD. That suggests no evidence of glyphosate being related to preterm birth.			
M-813333-01-1	Historical evidence of glyphosate exposure from a US agricultural cohort	Perry, Melissa J ; Mandrioli, Daniele ; Belpoggi, Fiorella ; Manservigi, Fabiana ; Panzacchi, Simona ; Irwin, Courtney	Environmental Health , Vol. 18, 20190101 E-ISSN: 1476-069X DOI: 10.1186/s12940-019-0474-6 Published by: BioMed Central, London	Category B, Relevant but supplementary articles after detailed assessment	The study population, the sampling and the method of analysis along with its validation are not sufficiently documented.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812216-01-1	Thyroid and reproductive hormones in relation to pesticide use in an agricultural population in Southern Brazil	Santos, Ramison; Cremonese, Cleber Piccoli, Camila Freire, Carmen (correspondence) Freire, Carmen (correspondence) Freire, Carmen (correspondence) Freire, Carmen (correspondence)	Environmental Research, (June 2019) pp. 221-231. Refs: 57 ISSN: 0013-9351; E-ISSN: 1096-0953 CODEN: ENVRAL	Category B, Relevant but supplementary articles after detailed assessment	Not sufficient information is given on the biochemical methods used.			
M-813296-01-1	Pesticide use and incident hypothyroidism in pesticide applicators in the agricultural health study	Shrestha, Srishti; Parks, Christine G.; Kamel, Freya; Sandler, Dale P.; Goldner, Whitney S.; Umbach, David M.; Ward, Mary H.; Lerro, Catherine C.; Koutros, Stella; Hofmann, Jonathan N.; Beane Freeman, Laura E.	Environmental Health Perspectives (1 Sep 2018) Volume 126, Number 9, 11 p., 58 refs. ISSN 0091-6765 E-ISSN: 1552-9924 DOI: 10.1289/EHP3194 Published by: Public Health Services, US Dept of Health and Human Services,	Category B, Relevant but supplementary articles after detailed assessment	Self-reported outcomes, lack of biological predicate for many pesticides (including glyphosate), and failure to control for confounding by other pesticides for glyphosate and for other pesticides.			
M-812166-01-1	Rhinitis associated with pesticide use among private pesticide applicators in the agricultural health study	Slager, Rebecca E.; Simpson, Sean L.; Levan, Tricia D.; Poole, Jill A.; Sandler, Dale P.; Hoppin, Jane A.	Journal of Toxicology and Environmental Health - Part A: Current Issues (Jan 2010) Volume 73, Number 20, pp. 1382-1393, 33 refs. ISSN 1528-7394 E-ISSN: 1087-2620 DOI: 10.1080/15287394.2010.497443 Published by: Taylor and Francis Inc., 325 Chestnut St, Su	Category B, Relevant but supplementary articles after detailed assessment	No information on the formulations, farming practice in the given time period had been provided.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813476-01-1	Environmental exposures in young adults with declining kidney function in a population at risk of Mesoamerican nephropathy.	Smpokou Evangelia-Theano; Gonzalez-Quiroz Marvin; Norman Jill; Caplin Ben Gonzalez-Quiroz Marvin; Aragon Aurora Martins Carla; Alvito Paula Martins Carla; Alvito Paula Le Blond Jennifer Glaser Jason; Wesseling Catharina Glaser Jason; Nitsch Dorothea; Pear	Occupational and environmental medicine, (2019 Dec) Vol. 76, No. 12, pp. 920-926. Electronic Publication Date: 27 Sep 2019 Journal code: 9422759. E-ISSN: 1470-7926. L-ISSN: 1351-0711.	Category B, Relevant but supplementary articles after detailed assessment	Too little glyphosate exposure for an informative study. Many confounding exposures. Although this was described as a case control study, the authors did not calculate odds ratios. Evaluation of mean values is not a causal parameter in a case control study.			
M-812355-01-1	Parkinsonism after chronic occupational exposure to glyphosate.	Wang Gang; Fan Xiao-Ning; Tan Yu-Yan; Cheng Qi; Chen Sheng-Di	Parkinsonism & related disorders, (2011 Jul) Vol. 17, No. 6, pp. 486-7. Electronic Publication Date: 2 Mar 2011 Journal code: 9513583. E-ISSN: 1873-5126. L-ISSN: 1353-8020.	Category B, Relevant but supplementary articles after detailed assessment	Reversible Parkinsonism in case of acute in-toxication is a well-known effect and not specific for glyphosate. No clear causal connection of chronic Parkinsonism to Glyphosate from the presented results.			
M-812476-01-1	A review of the carcinogenic potential of glyphosate by four independent expert panels and comparison to the IARC assessment.	Williams Gary M Aardema Marilyn Acquavella John Berry Sir Colin Brusick David Burns Michele M de Camargo Joao Lauro Viana Garabrant David Greim Helmut A Kier Larry D Kirkland David J Marsh Gary Solomon Keith R Sorahan Tom Roberts Ashley Weed Douglas L	Critical reviews in toxicology, (2016 Sep) Vol. 46, No. sup1, pp. 3-20. Journal code: 8914275. E-ISSN: 1547-6898. L-ISSN: 1040-8444.	Category B, Relevant but supplementary articles after detailed assessment	review, secondary source			
M-813269-01-1	Health effect of agricultural pesticide use in China: implications for the development of GM crops	Zhang Chao; Hu Ruifa Huang Jikun Huang Xusheng; Yin Yanhong; Chen Zhaohui Shi Guanming Li Yifan	Scientific reports, (20161010) Vol. 6, pp. 34918. Electronic Publication Date: 10 Oct 2016 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC5056523.	Category B, Relevant but supplementary articles after detailed assessment	Results likely valid for glyphosate under the exposure circumstances of the study, but not an appropriate design for chronic health effects. Short follow-up and limited exposure histories.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813310-01-1	A comparison of the effects of agricultural pesticide uses on peripheral nerve conduction in China	Zhang, Chao; Sun, Yiduo; Hu, Ruifa; Huang, Jikun; Huang, Xusheng; Li, Yifan; Yin, Yanhong; Chen, Zhaohui	Scientific Reports, (2018) Vol. 8, No. 1, pp. 1-8. CODEN: SRCEC3. ISSN: 2045-2322.	Category B, Relevant but supplementary articles after detailed assessment	Results comport with biological properties of the various pesticides. However, not an appropriate design to study the (potentially chronic) association between nerve conduction and pesticide exposure. short follow-up and limited exposure histories.			
M-812499-01-1	Exposure to glyphosate-based herbicides and risk for non-Hodgkin lymphoma: A meta-analysis and supporting evidence	Zhang, Luoping; Rana, Iemaan; Shaffer, Rachel M.; Taioli, Emanuela; Sheppard, Lianne	Mutation Research, Reviews in Mutation Research, (2019) Vol. 781, pp. 186-206. CODEN: MRRRFK. ISSN: 1383-5742.	Category B, Relevant but supplementary articles after detailed assessment	Meta-analysis cannot overcome the limitations of the studies included in the meta-analysis.			
M-806129-01-1	Acute pesticide poisoning among agricultural workers in the United States, 1998-2005.	Calvert, Geoffrey M.; Karnik, Jennifer	American Journal of Industrial Medicine, (December 2008) Vol. 51, No. 12, pp. 883-898. Refs: 39 ISSN: 0271-3586; E-ISSN: 1097-0274 CODEN: AJIMD8	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			
M-803357-01-1	Agricultural activities, pesticide use and occupational hazards among women working in small scale farming in Northern KwaZulu-Natal, South Africa.	Naidoo, Saloshni; London, Leslie; Burdorf, Alex; Naidoo, Rajen N.; Kromhout, Hans.	Int. J. Occup. Environ. Health, Volume 14, Issue 3, Page 218-224, Publication Year 2008	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			
M-803472-01-1	Biomonitoring of genotoxic risk in agricultural workers from five colombian regions: association to occupational exposure to glyphosate .	Bolognesi C; Carrasquilla G; Volpi S; Solomon K R; Marshall E J P	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 986-97.	Category B, Relevant but supplementary articles after detailed assessment	Information necessary to classify health outcome was not collected at the individual participant level; it is not possible to assess the health outcome in relation to any exposure using the results reported in this study. Additionally, exposure classification was based on self-reported glyphosate exposure, an indirect method by which to estimate exposure status of study participants. No biological evidence is provided to support exposure classification of study participants. Misclassification of either exposure, outcome, or both is possible in this study.	Y	Y	
M-803455-01-1	Chemical exposure among NZ farmers.	Firth Hilda M; Rothstein Diana S; Herbison G Peter; McBride David I	International journal of environmental health research, (2007 Feb) Vol. 17, No. 1, pp. 33-43.	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-459630-01-1	Findings from the Italian Program for Surveillance of Acute Pesticide-related Illness, 2005	Settimi, L.; Davanzo, F.; Travaglia, A.R.; Sesana, F.; Locatelli, C.; Cilento, I.; Volpe, C.; Russo, A.; Marcello, I.	Clinical Toxicology [Clin. Toxicol.], (20080600) vol. 46, no. 5, p. 388. ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			
M-806443-01-1	Pesticide poisoning of farm workers-implications of blood test results from Vietnam.	Dasgupta, Susmita; Meisner, Craig; Wheeler, David; Xuyen, Khuc; Lam, Nhan Thi.	Int. J. Hyg. Environ. Health, Volume 210, Issue 2, Page 121-132, Publication Year 2007	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			
M-809076-01-1	Pesticide-related dermatitis in Saku district, Japan, 1975-2000.	Horiuchi Nobuyuki; Oguchi Shinji; Nagami Hiroshi; Nishigaki Yoshio	International journal of occupational and environmental health, (2008 Jan-Mar) Vol. 14, No. 1, pp. 25-34.	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			
M-806451-01-1	Poisonings with pesticides in the Federal District of Brazil.	Caldas, Eloisa D.; Rebelo, Fernanda M.; Heliodoro, Viviane O.; Magalhaes, Andrea F. A.; Rebelo, Rafaela M.	Clin. Toxicol., Volume 46, Issue 10, Page 1058-1063, Publication Year 2008	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			
M-805990-01-1	Regional differences in time to pregnancy among fertile women from five Colombian regions with different use of glyphosate .	Sanin Luz-Helena; Carrasquilla Gabriel; Solomon Keith R; Cole Donald C; Marshall E J P	Journal of toxicology and environmental health. Part A, (2009) Vol. 72, No. 15-16, pp. 949-60.	Category B, Relevant but supplementary articles after detailed assessment	Information necessary to classify health outcome was not collected at the individual participant level; no biological evidence is provided to support exposure classification of study participants. Misclassification of exposure is possible in this study. It is not possible to assess the health outcome in relation to exposure using the results reported in this study.			
M-806678-01-1	Regional variation in the severity of pesticide exposure outcomes: applications of geographic information systems and spatial scan statistics	Sudakin, Daniel L.; Power, Laura E.	Clinical Toxicology, (2009) Vol. 47, No. 3, pp. 248-252. CODEN: CTPPA5. ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-805371-01-1	Pesticides exposure in Culturama, Brazil-Knowledge, attitudes, and practices	Recena, Maria Celina P.; Caldas, Eloisa D.; Pires, Dario X.; Pontes, Elenir Rose J. C.	Environmental Research, (2006) Vol. 102, No. 2, pp. 230-236. CODEN: ENVRAL. ISSN: 0013-9351.	Category B, Relevant but supplementary articles after detailed assessment	Publication does not report any estimate of association between glyphosate exposure and any health outcome			
M-478120-01-1	The NPIS Pesticide Surveillance Project - Eye contact with pesticides: Circumstances of exposure and toxicity.	Adams, Richard D. (correspondence); Perry, Liam; Bennett, Andrew; Eddleston, Michael; Bateman, D. Nicholas Thomas, Simon H.L. Thompson, John P. Vale, J. Allister	Clinical Toxicology, (May 2013) Vol. 51, No. 4, pp. 353. Abstract Number: 226. Meeting Info: 33rd International Congress of the European Association of Poisons Centres and Clinical Toxicologists, EAPCCT 2013. Copenhagen, Denmark. 28 May 2013-31 May 2013 I	Category B, Relevant but supplementary articles after detailed assessment	This is a report describing ocular exposures to pesticides. Formulated glyphosate is expected to cause moderate conjunctivitis & irritation when it gets in the eye due to the surfactant. This should not impact reregistration.			
M-812342-01-1	Clinical presentations with different glyphosate-containing herbicides.	Bosak, A.B. (correspondence); Heise, C.W.; Levine, M.; Graeme, K.A. Levine, M.	Journal of Medical Toxicology, (March 2014) Vol. 10, No. 1, pp. 72-73. Abstract Number: 20. Meeting Info: 2014 ACMT Annual Scientific Meeting. Phoenix, AZ, United States. 28 Mar 2014-30 Mar 2014 ISSN: 1556-9039	Category B, Relevant but supplementary articles after detailed assessment	This is a report about multiorgan failure after suicidal ingestion of formulated glyphosate and should not impact re-registration.			
M-813425-01-1	Electrocardiographic abnormalities associated with acute glyphosate toxicity.	Brunetti, Ryan Maradey, Joan A.; Dearmin, Rebecca S.; Belford, Peter Matthew; Bhavne, Prashant D., MD, FHRS (correspondence)	HeartRhythm Case Reports, (2019) . Refs: 11 E-ISSN: 2214-0271	Category B, Relevant but supplementary articles after detailed assessment	This article claims that dermal exposure to a small amount of glyphosate led to a cardiac arrhythmia and claims that the patient developed a Brugada syndrome & long QT syndrome after exposure. They measured the QTC in a wide-complex tracing which is uninterpretable. Brugada syndrome is largely due to sodium channel blockade in the cardiac myocytes, LQT syndrome is largely due to potassium channel blockade in the cardiac myocytes. Glyphosate does neither. Moreover, glyphosate is not dermally absorbed and multiple GLP studies have shown that glyphosate is not cardiotoxic.			
M-812474-01-1	Caustic effects of chemicals: risk factors for complications and mortality in acute poisoning	Caganova, Blazena; Foltanova, Tatiana; Plackova, Silvia; Plachakaterina; Bibza, Jaroslav; Puchon, Erik; Ondriasova, Elena; Batora, Igor	Monatshfte fuer Chemie, (2017) Vol. 148, No. 3, pp. 497-503. CODEN: MOCMB7. ISSN: 0026-9247.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses caustic injury in suicide attempts and therefore should not impact registration decisions.			
M-813324-01-1	Caustic ingestion in the elderly: influence of age on clinical outcome	Caganova, Blazena; Foltanova, Tatiana; Puchon, Erik; Ondriasova, Elena; Plackova, Silvia; Fazekas, Tomas; Kuzelova, Magdalena	Molecules, (2017) Vol. 22, No. 10, pp. 1726/1-1726/11. CODEN: MOLEFW. ISSN: 1420-3049.	Category B, Relevant but supplementary articles after detailed assessment	This article compares outcomes of caustic ingestions in elderly to younger patients and unsurprisingly demonstrates that there is a higher mortality in the older group. Glyphosate is mentioned in a table where there were 9 ingestions with no fatalities in the younger group and 2 fatalities in the elderly. This article discusses suicidal ingestions of caustic substances and should therefore not impact re-registration.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812385-01-1	Diurnal variation in probability of death following self-poisoning in Sri Lanka--evidence for chronotoxicity in humans.	Carroll Robert Metcalfe Chris; Gunnell David; Mohamed Fahim; Eddleston Michael	International journal of epidemiology, (2012 Dec) Vol. 41, No. 6, pp. 1821-8. Electronic Publication Date: 23 Nov 2012 Journal code: 7802871. E-ISSN: 1464-3685. L-ISSN: 0300-5771. Report No.: NLM-PMC3535746; PMC-PMC3535746.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the concept of chronotoxicity in overdoses. They found no evidence of circadian effects on glyphosate overdoses. This article discusses suicidal ingestions and therefore should not impact registration decisions.			
M-813235-01-1	Successful Extracorporeal Life Support in a Case of Severe Glyphosate-Surfactant Intoxication.	Chan Cheng-Wei Wu I-Lin; Lee Ching-Hsing; Hsu Shou-Chien; Liao Shu-Chen	Critical care medicine, (2016 Jan) Vol. 44, No. 1, pp. e45-7. Journal code: 0355501. E-ISSN: 1530-0293. L-ISSN: 0090-3493.	Category B, Relevant but supplementary articles after detailed assessment	Clinical report of acute formulation ingestion.			
M-813178-01-1	Spectrum of corrosive esophageal injury after intentional paraquat or glyphosate-surfactant herbicide ingestion.	Chen Hsiao-Hui Lin Ja-Liang; Huang Wen-Hung; Weng Cheng-Hao; Lee Shen-Yang; Hsu Ching-Wei; Chen Kuan-Hsing; Wang I-Kuan; Liang Chih-Chia; Chang Chiz-Tzung; Yen Tzung-Hai	International journal of general medicine, (2013) Vol. 6, pp. 677-83. Electronic Publication Date: 14 Aug 2013 Journal code: 101515487. ISSN: 1178-7074. L-ISSN: 1178-7074. Report No.: NLM-PMC3747816; PMC-PMC3747816.	Category B, Relevant but supplementary articles after detailed assessment	Ingestions of formulated glyphosate and paraquat are known to cause caustic injury which can result in respiratory and other complications.			
M-813440-01-1	Use of qSOFA Score in Predicting the Outcomes of Patients With Glyphosate Surfactant Herbicide Poisoning Immediately Upon Arrival at the Emergency Department.	Cho Yong Soo Moon Jeong Mi; Chun Byeong Jo; Lee Byung Kook	Shock (Augusta, Ga.), (2019 Apr) Vol. 51, No. 4, pp. 447-452. Journal code: 9421564. E-ISSN: 1540-0514. L-ISSN: 1073-2322.	Category B, Relevant but supplementary articles after detailed assessment	This article describes a scoring system that is widely used in intensive care and used to determine the prognosis of patients with a variety of presenting complaints. It is descriptive and helps physicians decide whether a patient needs early ICU intervention. This article is describing a series of overdoses and should not impact re-registration			
M-812266-01-1	Serial measurement of glyphosate blood concentration in a glyphosate potassium herbicide-intoxicated patient: A case report.	Cho Yongchul; You Yeonho; Cho Sunguk; Oh Sekwang; Ahn Hongjoon; Park Jungsoo; Min Jinhong Jeong Wonjoon Kim Suncheun Choi Hyunsoo	The American journal of emergency medicine, (2019 Apr 24) . Electronic Publication Date: 24 Apr 2019 Journal code: 8309942. E-ISSN: 1532-8171. L-ISSN: 0735-6757.	Category B, Relevant but supplementary articles after detailed assessment	Measurement of glyphosate blood concentration in an intoxicated patient, no unusual findings for such a case (suicide attempt).			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812338-01-1	Plasma lactate level may be an insufficient monitoring tool in critically ill patient: A case of ischemia modified albumin in acute glyphosate poisoning.	Choi, Byungho (correspondence); Sohn, Changhwan; Ryoo, Seung Mok; Ha, Sangwook; Jung, Rubi; Lim, Kyoungsoo; Oh, Bumjin	Toxicology Letters, (28 Aug 2013) Vol. 221, Supp. SUPPL. 1, pp. S66-S67. Abstract Number: P02-18. Meeting Info: 49th Congress of the European Societies of Toxicology, EUROTOX 2013. Interlaken, Switzerland. 01 Sep 2013-04 Sep 2013 ISSN: 0378-4274	Category B, Relevant but supplementary articles after detailed assessment	This is a report about measuring IMA rather than lactate as a marker of shock after suicidal ingestion of formulated glyphosate and should not impact re-registration.			
M-813635-01-1	Acute eosinophilic pneumonia associated with glyphosate-surfactant exposure.	De Raadt Wanda M Wijnen Petal A; Bast Aalt; Bekers Otto; Drent Marjolein	Sarcoidosis, vasculitis, and diffuse lung diseases : official journal of WASOG, (2015 Jul 22) Vol. 32, No. 2, pp. 172-5. Electronic Publication Date: 22 Jul 2015 Journal code: 9610928. ISSN: 1124-0490. L-ISSN: 1124-0490.	Category B, Relevant but supplementary articles after detailed assessment	Clinical report of human incident			
M-813616-01-1	Accidental chemical burns of oral mucosa by herbicide.	Deo S P Shetty P	JNMA; journal of the Nepal Medical Association, (2012 Jan-Mar) Vol. 52, No. 185, pp. 40-2. Journal code: 0045233. ISSN: 0028-2715. L-ISSN: 0028-2715.	Category B, Relevant but supplementary articles after detailed assessment	Large ingestions of formulated glyphosate can often result in caustic injury secondary to the surfactant's detergent actions on the mucous membranes of in people who ingest them. That said, they shouldn't cause microstomia, which tends to result from much more corrosive and scarring chemicals. This should not impact reregistration.			
M-813193-01-1	Hemodialysis clearance of glyphosate following a life-threatening ingestion of glyphosate-surfactant herbicide.	Garlich F M Goldman M; Pepe J; Nelson L S; Allan M J; Goldstein D A; Goldfarb D S; Hoffman R S	Clinical toxicology (Philadelphia, Pa.), (2014 Jan) Vol. 52, No. 1, pp. 66-71. Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the successful use of hemodialysis in a patient who was critically ill after a formulated glyphosate overdose			
M-813177-01-1	Effect of intravenous lipid emulsion in patients with acute glyphosate intoxication.	Gil Hyo-Wook Park Jae-Seok; Park Sang-Ho; Hong Sae-Yong	Clinical toxicology (Philadelphia, Pa.), (2013 Sep-Oct) Vol. 51, No. 8, pp. 767-71. Electronic Publication Date: 19 Jul 2013 Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	This paper evaluated the use of lipid therapy to treat formulated glyphosate overdoses. The mortality in these overdoses is usually due to the caustic injury to the mucosa from the surfactant moiety of the product. There is some evidence that lipid emulsion can decrease the toxicity of the surfactant. These are suicidal ingestions and should not impact reregistration.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812336-01-1	Severe toxicity from accidental glyphosate ingestion in a child.	Hansen, Nete B. (correspondence); Christensen, Lars B.; Hoegberg, Lotte Cg Kvist, Kolja	Clinical Toxicology, (May 2013) Vol. 51, No. 4, pp. 354. Abstract Number: 228. Meeting Info: 33rd International Congress of the European Association of Poisons Centres and Clinical Toxicologists, EAPCCT 2013. Copenhagen, Denmark. 28 May 2013-31 May 2013 I	Category B, Relevant but supplementary articles after detailed assessment	This is a case report of an accidental ingestion of formulated glyphosate resulting in mild corrosive injury to the GI tract in a small child and should not impact reregistration.			
M-812365-01-1	Herbicide roundup intoxication: successful treatment with continuous renal replacement therapy.	Hour Billy T; Belen Cary; Zar Tausif; Lien Yeong-Hau H	The American journal of medicine, (2012 Aug) Vol. 125, No. 8, pp. e1-2. Electronic Publication Date: 7 Jun 2012 Journal code: 0267200. E-ISSN: 1555-7162. L-ISSN: 0002-9343.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the use of CVVD in formulated glyphosate overdoses and medical management of suicidal ingestions and therefore should not impact registration decisions			
M-813302-01-1	Toxic Epidermal Necrolysis and Acute Kidney Injury due to Glyphosate Ingestion.	Indirakshi J Sunnesh A; Reddy M Hari Krishna; Kumar Anil C V; Chandra V Sarat; Sangeetha B; Ram R; Kumar V Siva Aruna M; Katyarmal D T	Indian journal of critical care medicine : peer-reviewed, official publication of Indian Society of Critical Care Medicine, (2017 Mar) Vol. 21, No. 3, pp. 167-169. Journal code: 101208863. ISSN: 0972-5229. L-ISSN: 0972-5229. Report No.: PMC-PMC5363107.	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate based formulations are not known to cause TEN which is a t-cell mediated type IV hypersensitivity reaction. >1% of glyphosate is absorbed through the skin and large ingestions have caustic effects on the GI tract which can result in multiorgan failure.			
M-813226-01-1	Utility of upper gastrointestinal endoscopy for management of patients with roundup poisoning.	Iwai, K.; Miyauchi, M.; Komazawa, D.; Murao, R.; Yokota, H.; Koyama, A.	Journal of Clinical Toxicology (2014), Volume 4, Number 6, 1000218 p., 14 refs. ISSN: 2161-0495 Published by: OMICS Publishing Group, Los Angeles URL (Availability): http://omicsonline.org/open-access/utility-of-upper-gastrointestinal-endoscopy-for-manag	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the use of endoscopy to treat formulated glyphosate overdose and medical management of suicidal ingestions and therefore should not impact registration decisions.			
M-813431-01-1	Intravenous lipid emulsion in treatment of cardiocirculatory disturbances caused by glyphosate-surfactant herbicide poisoning.	Jovic-Stosic Jasmina; Putic Vesna; Perkovic-Vukcevic Natasa; Babic Gordana; Dordevic Snezana; Segrt Zoran	Vojnosanitetski preglod, (2016 Apr) Vol. 73, No. 4, pp. 390-2. Journal code: 21530700R. ISSN: 0042-8450. L-ISSN: 0042-8450.	Category B, Relevant but supplementary articles after detailed assessment	Medical case of intentional ingestion.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812343-01-1	Antidotal use of intravenous lipid emulsion: 5 years' experience in an intensive care unit.	Jovic-Stosic, Jasmina (correspondence); Putic, Vesna; Vukcevic, Natasa; Ercegovic, Gordana; Vucinic, Slavica; Djordjevic, Snezana; Brajkovic, Gordana	Clinical Toxicology, (2016) Vol. 54, No. 4, pp. 476. Abstract Number: 246. Meeting Info: 36th International Congress of the European Association of Poisons Centres and Clinical Toxicologists, EAPCCT 2016. Madrid, Spain. 24 May 2016-27 May 2016 ISSN: 1556-	Category B, Relevant but supplementary articles after detailed assessment	This is a report about using ILE to treat overdoses with 1 patient who ingested formulated glyphosate. This paper should not impact reregistration.			
M-812335-01-1	Lipid emulsion in treatment of cardiovascular collapse in acute poisoning.	Jovic-Stosic, Jasmina (correspondence); Vukcevic, Natasa; Vucinic, Slavica; Ercegovic, Gordana Putic, Vesna Djordjevic, Snezana	Clinical Toxicology, (May 2013) Vol. 51, No. 4, pp. 288-289. Abstract Number: 80. Meeting Info: 33rd International Congress of the European Association of Poisons Centres and Clinical Toxicologists, EAPCCT 2013. Copenhagen, Denmark. 28 May 2013-31 May 201	Category B, Relevant but supplementary articles after detailed assessment	This is a case series that included 1 patient with a formulated glyphosate overdose and treatment with ILE. This describes medical management of overdoses and should not impact reregistration.			
M-813216-01-1	Esophageal perforation and death following glyphosate poisoning.	Jyoti Wadhwa Thabab M M; Rajagopalan S; Hamide A	Journal of postgraduate medicine, (2014 Jul-Sep) Vol. 60, No. 3, pp. 346-7. Journal code: 2985196R. E-ISSN: 0972-2823. L-ISSN: 0022-3859.	Category B, Relevant but supplementary articles after detailed assessment	Formulated glyphosate can cause caustic injury to the mucosa after ingestion. The esophagus is especially prone to perforation. Due to the absence of a serosa, the esophagus is notoriously difficult to repair & heal. This is not an unusual feature of caustic injury. As this was a suicide attempt, this should not impact reregistration.			
M-813238-01-1	A multicenter retrospective survey of poisoning after ingestion of herbicides containing glyphosate potassium salt or other glyphosate salts in Japan.	Kamijo Yoshito Takai Michiko Sakamoto Tetsuya	Clinical toxicology (Philadelphia, Pa.), (2016) Vol. 54, No. 2, pp. 147-51. Electronic Publication Date: 22 Dec 2015 Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the incidence of hyperkalemia and multiorgan failure after formulated glyphosate ingestions. Neither of these findings are surprising in the setting of potassium salt or surfactant ingestions.			
M-813144-01-1	Glyphosate-surfactant herbicide products containing glyphosate potassium salt can cause fatal hyperkalemia if ingested in massive amounts.	Kamijo Yoshito; Mekari Miyo; Yoshimura Kuniko; Kan'o Tomomichi; Soma Kazui	Clinical toxicology (Philadelphia, Pa.), (2012 Feb) Vol. 50, No. 2, pp. 159. Electronic Publication Date: 3 Feb 2012 Journal code: 101241654. E-ISSN: 1556-9519. L-ISSN: 1556-3650.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the fact that certain glyphosate-potassium salt formulations can cause fatal hyperkalemia in overdose. This article discusses a feature of suicidal ingestions and therefore should not impact registration decisions.			
M-813242-01-1	Three cases of an extreme hyperkalemia associated with glyphosate potassium herbicide poisoning	Kato Yoriko	Chudoku kenkyu : Chudoku Kenkyukai jun kikanishi = The Japanese journal of toxicology, (2015 Dec) Vol. 28, No. 4, pp. 368-70. Journal code: 9310053. ISSN: 0914-3777. L-ISSN: 0914-3777.	Category B, Relevant but supplementary articles after detailed assessment	This article describes a case series of three patients who presented with extreme hyperkalemia after suicidal ingestion of formulated glyphosate. This is not unexpected in an ingestion involving glyphosate formulated with potassium salts and should not affect reregistration.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813304-01-1	Vasculitic Neuropathy Following Exposure to a Glyphosate-based Herbicide.	Kawagashira Yuichi; Koike Haruki; Kawabata Kazuya; Takahashi Mie; Ohyama Ken; Hashimoto Rina; Iijima Masahiro; Katsuno Masahisa Sobue Gen	Internal medicine (Tokyo, Japan), (2017) Vol. 56, No. 11, pp. 1431-1434. Electronic Publication Date: 1 Jun 2017 Journal code: 9204241. E-ISSN: 1349-7235; L-ISSN: 0918-2918. Report No.: PMC-PMC5498212.	Category B, Relevant but supplementary articles after detailed assessment	This article discussed the development of painful discoloration of the toes and feet 4 months after the patient sprayed formulated glyphosate on his crops. Interestingly enough, the patient was taking warfarin therapeutically, which can cause the well-described "purple toe syndrome". There is not a mechanism by which sprayed formulated glyphosate can be absorbed by the skin and directly impact small vasculature or neurons in the feet.			
M-812407-01-1	Heart rate-corrected QT interval predicts mortality in glyphosate-surfactant herbicide-poisoned patients.	Kim Yong Hwan; Cho Kwang Won; Hwang Seong Youn Lee Jun Ho Hong Chong Kun Park Yong Hwan Kim Yang Weon	The American journal of emergency medicine, (2014 Mar) Vol. 32, No. 3, pp. 203-7. Electronic Publication Date: 1 Oct 2013 Journal code: 8309942. E-ISSN: 1532-8171. L-ISSN: 0735-6757.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the utility of the QTc interval to predict mortality in suicidal ingestions of glyphosate-based formulation. It is not unexpected for critically ill patients to develop a long QTc.			
M-812464-01-1	Prognostic Factors in Emergency Department Patients with Glyphosate Surfactant Intoxication: Point-of-Care Lactate Testing.	Kim Yong Hwan; Lee Jun Ho; Cho Kwang Won; Lee Dong Woo; Kang Mun Ju; Hwang Seong Youn Lee Kyoung Yul Lee Young Hwan Lee Na Kyoung	Basic & clinical pharmacology & toxicology, (2016 Dec) Vol. 119, No. 6, pp. 604-610. Electronic Publication Date: 23 Aug 2016 Journal code: 101208422. E-ISSN: 1742-7843. L-ISSN: 1742-7835.	Category B, Relevant but supplementary articles after detailed assessment	This study evaluated the use of lactate as a predictor of mortality and found a statistically significant association between a serum lactate of 4.7mmol/L and mortality in formulated glyphosate overdoses. This is not surprising as caustic injury due to detergent-like surfactants will cause cell death and thereby increase lactate levels. This article discusses predictors of mortality in suicidal ingestions and therefore should not impact registration decisions.			
M-813409-01-1	Patterns of drugs & poisons in southern area of South Korea in 2014.	Kim, Eunmi (correspondence) Park, Yonghoon Ha, Hongil Chung, Heesun	Forensic Science International, (1 Dec 2016) Vol. 269, pp. 50-55. Refs: 13 ISSN: 0379-0738; E-ISSN: 1872-6283 CODEN: FSINDR	Category B, Relevant but supplementary articles after detailed assessment	This is an article describing the chemicals/pharmaceuticals that were used in fatal overdoses that were forensically evaluated at the Busan Institute of National Forensic Services. Out of 606 fatalities, agricultural chemicals were involved in 5 and glyphosate was detected in 2 of the cases.			
M-813146-01-1	Continuous renal replacement therapy in a patient with cardiac arrest after glyphosate-surfactant herbicide poisoning.	Lee, B.K.; Lee, H.Y.; Ryu, H.H.; Jeung, K.W. Jeung, K. W. (correspondence)	Hong Kong Journal of Emergency Medicine, (May 2012) Vol. 19, No. 3, pp. 214-217. Refs: 10 ISSN: 1024-9079 CODEN: HKJEA2	Category B, Relevant but supplementary articles after detailed assessment	This is a report about multiorgan failure and the use of CVVHD after suicidal ingestion of formulated glyphosate and should not impact reregistration.			
M-813411-01-1	Severe glyphosate-surfactant intoxication: Successful treatment with continuous renal replacement therapy.	Lee, Dong Hoon Choi, Yoon Hee, MD, PhD (correspondence)	Hong Kong Journal of Emergency Medicine, (January 2017) Vol. 24, No. 1, pp. 40-44. Refs: 7 ISSN: 1024-9079 CODEN: HKJEA2	Category B, Relevant but supplementary articles after detailed assessment	This is a report about multiorgan failure and the use of dialysis after suicidal ingestion of formulated glyphosate and should not impact re-registration.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-473823-01-1	Incidence of acute occupational pesticide poisoning among male farmers in South Korea	Lee, Won Jin; Cha, Eun Shil; Park, Jinwoo; Ko, Yousun; Kim, Hyun Joong; Kim, Jaeyoung	American Journal of Industrial Medicine, (2012) Vol. 55, No. 9, pp. 799-807. CODEN: AJIMD8. ISSN: 0271-3586.	Category B, Relevant but supplementary articles after detailed assessment	This article describes a survey done to assess the incidence of pesticide poisoning in S. Korea. The researchers interviewed 1958 farmers and asked if they exhibited any of the 21 following symptoms: nausea, vomiting, diarrhea, sore throat, runny nose, dyspnea, headache, dizziness, hyperactivity, profuse sweating, blurred vision, paresthesia, slurred speech, paralysis, chest pain, syncope, muscle weakness, skin irritation, eye irritation, lacrimation, and fatigue. Based on these answers they categorized the farmers into mild, moderate or severe occupational exposure categories. There were 26 formulated glyphosate exposures 17 mild and 9 moderate, with zero fatalities. Based on this self-reported exposure data, they made the following claim: "acute occupational pesticide poisoning was 24.7(95% CI 22.1–27.2) per 100 male farmers, which corresponds to 209,512 cases across South Korea in 2010." This report supports the data that occupational exposure to glyphosate based products have a very low toxicity profile.			
M-811763-01-1	Workplace chemical and toxin exposures reported to a Poisons Information Centre: A diverse range causing variable morbidity.	Ling, Sophia L.-Y.; Taylor, David (correspondence) Robinson, Jeffery Taylor, David (correspondence)	European Journal of Emergency Medicine, (2018) Vol. 25, No. 2, pp. 134-139. Refs: 24 ISSN: 0969-9546; E-ISSN: 1473-5695	Category B, Relevant but supplementary articles after detailed assessment	This article describes the characteristics of toxin/chemical exposures reported to an Australian poison center. Glyphosate is mentioned only in 1 table with no description of effects.			
M-813473-01-1	Surgical treatment of pyloric stenosis caused by glyphosate poisoning: A case report.	Luo Wenjun Lu Tingting; Li Fugen; Qian Chuan; Zhang Liuping; Sun Meng; Xu Zhengwen; Jia Yingdong	Medicine, (2019 Jul) Vol. 98, No. 30, pp. e16590. Journal code: 2985248R. E-ISSN: 1536-5964. L-ISSN: 0025-7974. Report No.: PMC-PMC6709011.	Category B, Relevant but supplementary articles after detailed assessment	This article describes a case report of gastric ulceration and swelling causing pyloric obstruction in a patient who ingested formulated glyphosate. This is not unexpected as formulations contain surfactants which can cause caustic injury to the GI tract with suicidal ingestions. This should not impact re-registration.			
M-813203-01-1	Glyphosate surfactant herbicide poisoning and management.	Mahendrakar Kranthi; Venkateshwar Pradeep M; Rao S Manimala; Mutkule Dnyaneshwar P	Indian journal of critical care medicine : peer-reviewed, official publication of Indian Society of Critical Care Medicine, (2014 May) Vol. 18, No. 5, pp. 328-30. Journal code: 101208863. ISSN: 0972-5229. L-ISSN: 0972-5229. Report No.: NLM-PMC4047698; PMC	Category B, Relevant but supplementary articles after detailed assessment	ILE has been proposed as a possible therapy for formulated glyphosate overdoses.	Y		
M-812466-01-1	Mechanism-specific injury biomarkers predict nephrotoxicity early following glyphosate surfactant herbicide (GPSH) poisoning.	Mohamed Fahim Endre Zoltan H Pickering John W Jayamanne Shaluka; Palangasinghe Chathura; Shahmy Seyed; Chathuranga Umesh; Wijerathna Thilini; Shihana Fathima; Gawarammana Indika Buckley Nicholas A	Toxicology letters, (2016 Sep 06) Vol. 258, pp. 1-10. Electronic Publication Date: 7 Jun 2016 Journal code: 7709027. E-ISSN: 1879-3169. L-ISSN: 0378-4274.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the use of biomarkers to predict kidney injury in formulated glyphosate overdose and predictors of nephrotoxicity in suicidal ingestions and therefore should not impact registration decisions.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812463-01-1	The characteristics of emergency department presentations related to acute herbicide or insecticide poisoning in South Korea between 2011 and 2014.	Moon Jeong Mi; Chun Byeong Jo; Cho Yong Soo	Journal of toxicology and environmental health. Part A, (2016) Vol. 79, No. 11, pp. 466-76. Journal code: 100960995. ISSN: 1528-7394. L-ISSN: 0098-4108.	Category B, Relevant but supplementary articles after detailed assessment	This study showed a decrease in the case fatality rate of suicidal pesticide ingestions between 2011-2014 in South Korea. This clearly demonstrates that herbicides with a lower acute toxicity profile are associated with lower mortality in suicidal ingestions.			
M-813428-01-1	Paralytic ileus induced by glyphosate intoxication successfully treated using Kampo medicine.	Nakae Hajime; Kusanagi Misato; Okuyama Manabu; Igarashi Toshiko	Acute medicine & surgery, (20150700) Vol. 2, No. 3, pp. 214-218. Electronic Publication Date: 11 Dec 2014 Journal code: 101635464. ISSN: 2052-8817. L-ISSN: 2052-8817. Report No.: PMC-PMC5667246.	Category B, Relevant but supplementary articles after detailed assessment	This article describes alternative medicine therapies that were used to treat a Japanese woman with a paralytic ileus after glyphosate ingestion. It is not uncommon for patients in a critical care setting to develop an ileus. These tend to resolve on their own without intervention. I cannot comment on whether this intervention increases GI motility. This should not impact re-registration.			
M-812253-01-1	Renal cortical hypoperfusion caused by glyphosate-surfactant herbicide.	Nakayama Takashin; Hirano Keita; Mimura Yu	Clinical and experimental nephrology, (20190600) Vol. 23, No. 6, pp. 865-866. Electronic Publication Date: 19 Jan 2019 Journal code: 9709923. E-ISSN: 1437-7799. L-ISSN: 1342-1751. Report No.: PMC-PMC6511354.	Category B, Relevant but supplementary articles after detailed assessment	This was a suicidal ingestion of formulated glyphosate that resulted in poor renal perfusion & multiorgan failure. Since this was a suicidal ingestion, the outcome is not unexpected and should not impact the re-egistration.			
M-812337-01-1	Non-Ethanol hyperlipasemia in toxicology consultation.	Ordenez, Jhonny (correspondence) Kleinschmidt, Kurt; Wax, Paul	Clinical Toxicology, (August 2013) Vol. 51, No. 7, pp. 703. Abstract Number: 282. Meeting Info: 2013 Annual Meeting of the North American Congress of Clinical Toxicology, NACCT 2013. Atlanta, GA, United States. 27 Sep 2013-02 Oct 2013 ISSN: 1556-3650	Category B, Relevant but supplementary articles after detailed assessment	This is a case series looking at the toxic causes of pancreatitis in overdose patients. One of whom had ingested formulated glyphosate. This should not impact re-registration.			
M-812210-01-1	Severe Glyphosate-Surfactant Intoxication Successfully Treated With Continuous Hemodiafiltration and Direct Hemoperfusion: Case Report.	Ozaki Taro; Sofue Tadashi; Kuroda Yasuhiro	Therapeutic apheresis and dialysis : official peer-reviewed journal of the International Society for Apheresis, the Japanese Society for Apheresis, the Japanese Society for Dialysis Therapy, (20170600) Vol. 21, No. 3, pp. 296-297. Journal code: 101181252.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the use of hemodialysis and hemofiltration in formulated glyphosate overdoses. This article discusses medical management of suicidal ingestions and therefore should not impact registration decisions.			
M-813408-01-1	Concurrent Hemoperfusion and Hemodialysis in Patients with Acute Pesticide Intoxication.	Park, Samel; Lee, Sunhyo; Gil, Hyowook; Lee, Eunyong; Yang, Jongoh; Hong, Saeyong (correspondence) Park, Suyeon	Blood Purification, (1 Dec 2016) Vol. 42, No. 4, pp. 329-336. Refs: 24 ISSN: 0253-5068; E-ISSN: 1421-9735 CODEN: BLPUDO	Category B, Relevant but supplementary articles after detailed assessment	This article describes the use of hemodialysis and hemoperfusion in pesticide overdoses. Out of 383 pesticide ingestions 110 were glyphosate formulations. Of the 80 deaths reported 12 of them were glyphosate. This article is describing a possibly beneficial modality of treating severe pesticide overdose and should not impact reregistration.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813414-01-1	Glyphosate ingestion causing multiple organ failure: A near-fatal case report.	Picetti, Edoardo; Generali, Michela; Mensi, Francesca Neri, Giampaolo; Damia, Roberta; Cervellin, Gianfranco, MD. (correspondence) Lippi, Giuseppe Cervellin, Gianfranco, MD. (correspondence)	Acta Biomedica, (2017) Vol. 88, No. 4, pp. 533-536. Refs: 17 ISSN: 0392-4203; E-ISSN: 2531-6745 CODEN: ATPRAN	Category B, Relevant but supplementary articles after detailed assessment	This is a report about multiorgan failure after suicidal ingestion of formulated glyphosate and should not impact re-registration.			
M-812255-01-1	Acute toxic limbic encephalopathy following glyphosate intoxication.	Planche Vincent; Vergnet Sylvain; Auzou Nicolas; Bonnet Marie; Tourdias Thomas; Tison Francois	Neurology, (2019 Mar 12) Vol. 92, No. 11, pp. 534-536. Electronic Publication Date: 8 Feb 2019 Journal code: 0401060. E-ISSN: 1526-632X. L-ISSN: 0028-3878.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the neurologic sequelae of glyphosate ingestion. Glyphosate cannot cross the blood brain barrier. It is not neurotoxic.			
2012_1189983 - 0	Improving poisoning diagnosis and surveillance of street pesticides	Rother, Hanna-Andrea	SAMJ, (2012) Vol. 102, No. 6, Special Iss., pp. 485-488. CODEN: SAMJEJ. ISSN: 0256-9574.	Category B, Relevant but supplementary articles after detailed assessment	No new information included.			
M-813152-01-1	Pathological and toxicological findings in glyphosate-surfactant herbicide fatality: a case report.	Sribanditmongkol Pongruk Jutavijittum Prapan; Pongraveevongsa Pattaravadee; Wunnapuk Klintean; Durongkadech Piya	The American journal of forensic medicine and pathology, (2012 Sep) Vol. 33, No. 3, pp. 234-7. Journal code: 8108948. E-ISSN: 1533-404X. L-ISSN: 0195-7910.	Category B, Relevant but supplementary articles after detailed assessment	Description of a case of poisoning/ suicidal ingestions of formulated glyphosate cause caustic injury, it is not unusual to find ulceration and hemorrhage of the GI tract in lethal ingestions.	Y		
M-813468-01-1	Decrease in Butyrylcholinesterase Accompanied by Intermediate-like Syndrome after Massive Ingestion of a Glyphosate-surfactant.	Takeuchi Ikuto; Yanagawa Youichi; Nagasawa Hiroki; Jitsuiki Kei; Madokoro Shunsuke; Takahashi Norihito; Ohsaka Hiromichi; Ishikawa Kouhei; Omori Kazuhiko	Internal medicine (Tokyo, Japan), (2019 Jun 27) . Electronic Publication Date: 27 Jun 2019 Journal code: 9204241. E-ISSN: 1349-7235. L-ISSN: 0918-2918.	Category B, Relevant but supplementary articles after detailed assessment	Description of a poisoning case related to a surfactant, symptoms are not unusual.			
M-813223-01-1	Glyphosate poisoning with acute pulmonary edema.	Thakur Darshana Sudip; Khot Rajashree; Joshi P P; Pandharipande Madhuri; Nagpure Keshav	Toxicology international, (2014 Sep-Dec) Vol. 21, No. 3, pp. 328-30. Journal code: 101191279. ISSN: 0971-6580. L-ISSN: 0971-6580. Report No.: NLM-PMC4413421; PMC-PMC4413421.	Category B, Relevant but supplementary articles after detailed assessment	This is a case report of the clinical manifestations of glyphosate-based herbicide ingestions and discusses predictors of mortality in suicidal ingestions and therefore should not impact registration decisions.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813186-01-1	Toxicovigilance I: a survey of acute poisonings in South Africa based on tygerberg poison information centre data	Veale, D. J. H.; Wium, C. A.; Muller, G. J.	SAMJ, (2013) Vol. 103, No. 5, pp. 293-297. CODEN: SAMJEJ. ISSN: 0256-9574.	Category B, Relevant but supplementary articles after detailed assessment	This article discusses the chemicals used in S Africa for suicide. Glyphosate is only mentioned in a table in the article as being involved in 23 cases over a 1 year period accounting for 0.9% of the overall cases reported.			
M-813104-01-1	Atypical presentation of glyphosate poisoning.	Vidyadhara (correspondence); Sivakumar, M.N.; Sureshkumar, T.; Hisham, Mohamed	Indian Journal of Critical Care Medicine, (February 2014) Vol. 18, Suppl. SUPPL. 1, pp. S36. Abstract Number: 71. Meeting Info: A Joint Meeting of 20th Annual Conference of the Indian Society of Critical Care Medicine, 18th Asia-Pacific Congress of Critica	Category B, Relevant but supplementary articles after detailed assessment	This is a report about multiorgan failure after suicidal ingestion of formulated glyphosate and should not impact reregistration.			
M-813424-01-1	Successful extracorporeal membrane oxygenation support for severe acute diquat and glyphosate poisoning: A case report.	Wang, Danqiong, MD (correspondence); Zhang, Weiwen; Luo, Jian; Zhu, Lihua; Hu, Jianhua Zhang, Guozheng	Medicine (United States), (1 Feb 2019) Vol. 98, No. 6, pp. e14414. Refs: 24 ISSN: 0025-7974; E-ISSN: 1536-5964 CODEN: MEDIAV	Category B, Relevant but supplementary articles after detailed assessment	This article describes using ECMO to manage a patient with multiorgan failure after formulated glyphosate and diquat ingestion.			
M-812339-01-1	PiCCO interpretation for acute glyphosate intoxication with shock: Favors cardiogenic origin.	Wu, Cho Ju (correspondence); Lin, Chih Chuan	Clinical Toxicology, (May 2015) Vol. 53, No. 4, pp. 329. Abstract Number: 206. Meeting Info: 35th International Congress of the European Association of Poisons Centres and Clinical Toxicologists, EAPCCT 2015. St Julian's, Malta. 26 May 2015-29 May 2015 IS	Category B, Relevant but supplementary articles after detailed assessment	This is a report about multiorgan failure after suicidal ingestion of formulated glyphosate and should not impact reregistration.			
M-812340-01-1	Glyphosate intoxication resulting in ventricular dysrhythmias and cardiogenic shock.	Wu, I-Lin (correspondence); Lin, Chih-Chuan	Clinical Toxicology, (May 2015) Vol. 53, No. 4, pp. 329-330. Abstract Number: 207. Meeting Info: 35th International Congress of the European Association of Poisons Centres and Clinical Toxicologists, EAPCCT 2015. St Julian's, Malta. 26 May 2015-29 May 201	Category B, Relevant but supplementary articles after detailed assessment	This is a report about multiorgan failure and use of ECMO after suicidal ingestion of formulated glyphosate and should not impact reregistration.			
M-813105-01-1	Successful treatment with hemodialysis for acute renal failure after glyphosate poisoning: A case report.	Wu, Meng-Huan (correspondence); Lee, Ching-Hsing	Clinical Toxicology, (May 2015) Vol. 53, No. 4, pp. 330-331. Abstract Number: 209. Meeting Info: 35th International Congress of the European Association of Poisons Centres and Clinical Toxicologists, EAPCCT 2015. St Julian's, Malta. 26 May 2015-29 May 201	Category B, Relevant but supplementary articles after detailed assessment	This is areport about renal failure and hemodialysis after suicidal ingestion of formulated glyphosate and should not impact reregistration.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812408-01-1	Use of a glyphosate-based herbicide-induced nephrotoxicity model to investigate a panel of kidney injury biomarkers.	Wunnapuk Klintean Gobe Glenda Endre Zoltan Peake Philip Grice Jeffrey E Roberts Michael S Buckley Nicholas A Liu Xin	Toxicology letters, (2014 Feb 10) Vol. 225, No. 1, pp. 192-200. Electronic Publication Date: 19 Dec 2013 Journal code: 7709027. E-ISSN: 1879-3169. L-ISSN: 0378-4274.	Category B, Relevant but supplementary articles after detailed assessment	Formulation tested in vivo (Concentrate Roundup Weedkiller, 360 g/L isopropylamine salt, Australia) at high acute doses of 250 - 2500 mg/kg			
M-813220-01-1	Clostridium tertium bacteremia in a patient with glyphosate ingestion.	You Myung-Jo; Shin Gee-Wook Lee Chang-Seop	The American journal of case reports, (2015 Jan 06) Vol. 16, pp. 4-7. Electronic Publication Date: 6 Jan 2015 Journal code: 101489566. E-ISSN: 1941-5923. L-ISSN: 1941-5923. Report No.: NLM-PMC4289481; PMC-PMC4289481.	Category B, Relevant but supplementary articles after detailed assessment	This article discussed the use of hemodialysis in the management of hyperkalemia and metabolic acidosis after formulated glyphosate overdose> Hemodialysis is often used to manage refractory hyperkalemia and acidosis. This article discusses medical management of suicidal ingestions and therefore should not impact registration decisions.			
M-813263-01-1	Effect of intravenous fat emulsion therapy on glyphosate-surfactant-induced cardiovascular collapse.	You Yeonho Jung Won Jun; Lee Mi Jin	The American journal of emergency medicine, (2012 Nov) Vol. 30, No. 9, pp. 2097.e1-2. Electronic Publication Date: 16 Mar 2012 Journal code: 8309942. E-ISSN: 1532-8171. L-ISSN: 0735-6757.	Category B, Relevant but supplementary articles after detailed assessment	This article is discussing the efficacy of intravenous fat emulsion as therapy for formulated glyphosate overdose. It is a case report that contributes to the evidence that this might be a useful treatment as it might limit the toxicity associated with large surfactant ingestions. There are no RCTs for this because it is a suicidal overdose situation.			
M-813171-01-1	Determination of glyphosate and AMPA in blood and urine from humans: about 13 cases of acute intoxication.	Zouaoui K Dulaurent S; Gaulier J M; Moesch C; Lachatre G	Forensic science international, (2013 Mar 10) Vol. 226, No. 1-3, pp. e20-5. Electronic Publication Date: 3 Jan 2013 Journal code: 7902034. E-ISSN: 1872-6283. L-ISSN: 0379-0738.	Category B, Relevant but supplementary articles after detailed assessment	This is a report on a series of formulated glyphosate overdoses that found that higher blood and urine concentrations of glyphosate were associated with a poorer outcome. This is not surprising, because it reflects that patients drank a larger volume. Larger volumes of formulated product are associated with more toxicity due to the caustic nature of the surfactant, not the amount of active ingredient. All of the laboratory parameters are expected in critically ill patients. As these were suicidal ingestions, this paper should not impact reregistration.	Y		
M-813270-01-1	Global research production in glyphosate intoxication from 1978 to 2015: A bibliometric analysis.	Zyoud S H Zyoud S H; Al-Jabi S W Waring W S Sweileh W M	Human & experimental toxicology, (2017 Oct) Vol. 36, No. 10, pp. 997-1006. Electronic Publication Date: 12 Nov 2016 Journal code: 9004560. E-ISSN: 1477-0903. L-ISSN: 0960-3271.	Category B, Relevant but supplementary articles after detailed assessment	This article analyzes the reports of increase in glyphosate intoxications from the early 1970s-2016. Given the increase in use over the same time period it is not surprising that there has been an increase in reporting. This should not impact reregistration.			
M-813711-01-1	DIRECT TREATMENT WITH ROUNDUP VS. TREATMENT WITH PLANT EXTRACT PREVIOUSLY INFLUENCED BY ROUNDUP: DOES THE GENOTOXIC EFFECT DIFFER?.	Gateva, Svetla [Reprint Author]; Jovtchev, Gabriele; Stankov, Alexander	Dokladi na Bolgarskata Akademiya na Naukite, (2020) Vol. 73, No. 7, pp. 978-984. http://www.proceedings.bas.bg/ . ISSN: 1310-1331.	Category B, Relevant but supplementary articles after detailed assessment	Article provides only supplementary information on cytotoxicity and genotoxicity of GBH, but not altering risk assessment. No specification of glyphosate formulation (test item). No negative control (formulation without glyphosate). No historical control data. Genotoxic effects only observed at cytotoxic concentrations.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813497-01-1	Effect of zinc supplementation on chronic hepatorenal toxicity following oral exposure to glyphosate-based herbicide (Bushfire®) in rats.	Tizhe Emmanuel Vandi Ibrahim Najume Dogon-Giginya; Fatihu Mohammed Yakasai Ambali Suleiman Folorunsho Igbokwe Ikechukwu Onyebuchi Tizhe Ussa Delia	The Journal of international medical research, (2020 Aug) Vol. 48, No. 8, pp. 300060520925343. Journal code: 0346411. E-ISSN: 1473-2300. L-ISSN: 0300-0605. Report No.: PMC-PMC7469744.	Category B, Relevant but supplementary articles after detailed assessment	The publication investigates whether zinc supplementation can improve toxicity caused by glyphosate. No new information on glyphosate toxicity itself is provided, therefore the article does not alter the risk assessment. Many important basic parameters which are standard in the conduct and reporting of toxicology studies are absent; food consumption, body weight, body weight gain, clinical signs, diarrhea, etc. In addition, gavage of a surfactant containing mixture for 36 weeks would likely result in gastrointestinal effects, such as ulcers in the forestomach of rats, and necropsies were not performed to evaluate this significant consequence of repeated gavaging of surfactant. With the absence of recorded liver weights, potential adaptive responses of increased circulating enzymes are not able to be put into context. Therefore, no context of the clinical chemistry findings can be understood.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813435-01-1	Glyphosate based- herbicide exposure affects gut microbiota, anxiety and depression-like behaviors in mice.	Aitbali Yassine; Ba-M'hamed Saadia Elhidar Najoua; Nafis Ahmed Sora Nabila Bennis Mohamed	Neurotoxicology and teratology, (2018 May - Jun) Vol. 67, pp. 44-49. Electronic Publication Date: 7 Apr 2018 Journal code: 8709538. E-ISSN: 1872-9738. L-ISSN: 0892-0362.	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear. This study apparently uses roundup administered at 1/2 or at the NOAEL via stomach tube. The surfactant (soap) is irritating and any negative results are not surprising. Acid effect of the glyphosate is also a concern.			
M-806109-01-1	Cytogenetic effect of technical glyphosate on cultivated bovine peripheral lymphocytes.	Sivikova, K.; Dianovsky, J.	International Journal of Hygiene and Environmental Health (2006) , Volume 209, Number 1, pp. 15-20, 25 refs. ISSN: 1438-4639 DOI: 10.1016/j.ijheh.2005.07.005 Published by: Elsevier GmbH, Jena URL (Availability): http://www.sciencedirect.com/science/journal/1438463 9	Category C, articles of unclear relevance after detailed assessment	The paper is about an in vitro CA and SCE study on bovine lymphocytes exposed to a glyphosate formulation for 2h with metabolic activation and 24h and 48 h without metabolic activation. A glyphosate product (glyphosate , approximate 62% by weight) with 3	Y	Y	
M-813599-01-1	Glyphosate effects on the female reproductive systems: a systematic review.	Kaboli Kafshgiri Sakineh Farkhondeh Tahereh Miri-Moghaddam Ebrahim	Reviews on environmental health, (2021 Jul 15) . Electronic Publication Date: 15 Jul 2021 Journal code: 0425754. E-ISSN: 2191-0308. L-ISSN: 0048-7554.	Category C, articles of unclear relevance after detailed assessment	The paper is a review of the literature that provides information on the effect of glyphosate formulations on the female reproductive system. The review does not provide all the necessary information, especially on the test material used, but refers to the original studies / there are no information on the formulation used and if they are similar to the representative formulation in EU/formulation accepted in EU.			
M-813577-01-1	Involvement of mitochondrial fission in renal tubular pyroptosis in mice exposed to high and environmental levels of glyphosate combined with hard water.	Zhang Lin; Ding Fan; Wang Ruojing; Wu Xuan Wan Yi; Hu Jianying Wu Qing	Environmental pollution (Barking, Essex : 1987), (2021 Apr 05) Vol. 283, pp. 117082. Electronic Publication Date: 5 Apr 2021 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category C, articles of unclear relevance after detailed assessment	The relevance of this article is unclear. Although this publication provides information about involvement of mitochondrial fission in renal tubular pyroptosis in mice exposed to glyphosate combined with hard water, it is uncertain without further guidance, how these data can be related to the EU level regulatory risk assessment and how to interpret the data within the context of a renewal.			
M-813597-01-1	Glyphosate-based herbicides: Evidence of immune-endocrine alteration.	Maddalon Ambra Galbiati Valentina Colosio Claudio; Mandic-Rajcevic Stefan Corsini Emanuela	Toxicology, (20210700) Vol. 459, pp. 152851. Electronic Publication Date: 8 Jul 2021 Journal code: 0361055. E-ISSN: 1879-3185. L-ISSN: 0300-483X.	Category C, articles of unclear relevance after detailed assessment	This paper is a review of published epidemiological studies and studies performed in vitro and in vivo in animals, the possible association between glyphosate based herbicides and immune-endocrine alterations. Overall, the authors could not conclude on the immune-endocrine alteration reported in the analysed publications and stated that further studies are required. No information was provided on the criteria used to select the publications and to conclude on their reliability. Most of the experiments were performed with glyphosate formulations and only few of them with pure glyphosate. However, the details on the test items used are not available for all the studies included in this review - some trade names are provided but not for all the studies. Moreover, the co-formulant POEA, is mentioned and likely to be included in some of the formulations. As lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813601-01-1	Glyphosate Herbicide: Reproductive Outcomes and Multigenerational Effects.	Milesi Maria Mercedes; Lorenz Virginia; Durando Milena; Rossetti Maria Florencia; Varayoud Jorgelina Milesi Maria Mercedes; Durando Milena; Varayoud Jorgelina Rossetti Maria Florencia	Frontiers in endocrinology, (2021) Vol. 12, pp. 672532. Electronic Publication Date: 7 Jul 2021 Journal code: 101555782. ISSN: 1664-2392. L-ISSN: 1664-2392. Report No.: PMC-PMC8293380.	Category C, articles of unclear relevance after detailed assessment	This paper is a review of the literature that provides information on the effects of glyphosate and glyphosate based formulations on reproductive health and endocrine functions. Overall, there is an absence of criteria for selecting the publications and their relevance/acceptability. Analyses of the selected publications highlighted the importance and need of further evaluating the toxicology of glyphosate and its formulations to the reproductive performance. Most of the experiments were performed with glyphosate formulations and only few of them with pure glyphosate. However, the details on the test items used are not available for all the studies included in this review - some trade names are provided but not for all the studies. Moreover, the co-formulant POEA, is mentioned and likely to be included in some of the formulations. As lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.			
M-813611-01-1	A systematic review and meta-analysis of the impacts of glyphosate on the reproductive hormones.	Mohammadi Keyhan Sani Mahmood Alizadeh; Safaei Payam; Molaei-Aghaei Ebrahim Rahmani Jamal Jafari Seid Mahdi	Environmental science and pollution research international, (2021 Aug 27) . Electronic Publication Date: 27 Aug 2021 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category C, articles of unclear relevance after detailed assessment	The paper is a review of the literature and meta-analysis that provides information on the effect of glyphosate on the reproductive hormones. Among the initial 279 records identified, 54 articles were retrieved for full-text evaluation, and then only eight studies were eligible for this systematic review and meta-analysis. There are some experiences performed with pure glyphosate, however the details on the test items used are not available for all the studies included in this review. Overall, the outcome of this review based on the qualified studies could suggest a possible effect of glyphosate and/or glyphosate based herbicides on the health reproductive system due to a tendency in decreasing testosterone and follicle-stimulating hormone (FLH). However, as indicated by the authors this review may be affected by a series of limitations among which the high heterogeneity within the hormonal measurements and the small sample size of the final eligible studies for this review. As lack of criteria in the selection of the reviewed publications and/or the high heterogeneity in the reported results and/or no firm conclusion on whether the observed effects could be unequivocally associated to exposure to glyphosate and/or glyphosate herbicides.			
M-813588-01-1	Epigenetic Changes Associated With Exposure to Glyphosate-Based Herbicides in Mammals.	Rossetti Maria Florencia; Canesini Guillermina; Lorenz Virginia; Milesi Maria Mercedes; Varayoud Jorgelina; Ramos Jorge Guillermo Rossetti Maria Florencia; Ramos Jorge Guillermo Canesini Guillermina Milesi Maria Mercedes; Varayoud Jorgelina	Frontiers in endocrinology, (2021) Vol. 12, pp. 671991. Electronic Publication Date: 21 May 2021 Journal code: 101555782. ISSN: 1664-2392. L-ISSN: 1664-2392. Report No.: PMC-PMC8177816.	Category C, articles of unclear relevance after detailed assessment	This paper is a review of the literature that provides information on epigenetic changes associated with exposure to glyphosate and glyphosate formulations. However, the details on the test items used are not available for all the studies included in this review.			
M-813586-01-1	A Review and Update with Perspective of Evidence that the Herbicide Glyphosate (Roundup) is a Cause of Non-Hodgkin Lymphoma.	Weisenburger Dennis D	Clinical lymphoma, myeloma & leukemia, (2021 Sep) Vol. 21, No. 9, pp. 621-630. Electronic Publication Date: 24 Apr 2021 Journal code: 101525386. E-ISSN: 2152-2669. L-ISSN: 2152-2669.	Category C, articles of unclear relevance after detailed assessment	This paper is a review of the literature that provides information on exposure to glyphosate formulations and non-hodgkin lymphoma. However, the details on the formulation used are not available for all the studies included in this review. As there are some experiences performed with pure glyphosate.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813467-01-1	Minimum Inhibitory Concentration of Glyphosate and of a Glyphosate-Containing Herbicide Formulation for <i>Escherichia coli</i> Isolates - Differences Between Pathogenic and Non-pathogenic Isolates and Between Host Species.	Bote Katrin; Poppe Judith; Makarova Olga; Roesler Uwe; Merle Roswitha	Frontiers in microbiology, (2019) Vol. 10, pp. 932. Electronic Publication Date: 3 May 2019 Journal code: 101548977. ISSN: 1664-302X. L-ISSN: 1664-302X. Report No.: PMC-PMC6509229.	Category C, articles of unclear relevance after detailed assessment	The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. Therefore, the relevance of the publication is unclear.			
M-812180-01-1	Glyphosate suppresses the antagonistic effect of <i>Enterococcus</i> spp. on <i>Clostridium botulinum</i> .	Kruger Monika; Shehata Awad Ali; Schrodli Wieland; Rodloff Arne	Anaerobe, (2013 Apr) Vol. 20, pp. 74-8. Electronic Publication Date: 6 Feb 2013 Journal code: 9505216. E-ISSN: 1095-8274. L-ISSN: 1075-9964.	Category C, articles of unclear relevance after detailed assessment	The relevance of the publication for the risk assessment of glyphosate is considered uncertain because no statistically significant and dose related increase in the production of botulinum toxin could be demonstrated.			
M-813559-01-1	Low-dose exposure of glyphosate-based herbicides disrupt the urine metabolome and its interaction with gut microbiota.	Hu Jianzhong; Lesseur Corina; Miao Yu; Chen Jia; Petrick Lauren; Manservigi Fabiana; Panzacchi Simona; Mandrioli Daniele; Belpoggi Fiorella; Manservigi Fabiana; Mandrioli Daniele; Petrick Lauren	Scientific reports, (2021 Feb 05) Vol. 11, No. 1, pp. 3265. Electronic Publication Date: 5 Feb 2021 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC7864973.	Category C, articles of unclear relevance after detailed assessment	Potential effects to gut microbes are not part of the EU risk assessments. Suitable scientific approaches to assess effects are not specified, thus relevance of the effects remained unclear.			
M-813412-01-1	Evidence the U.S. autism epidemic initiated by acetaminophen (Tylenol) is aggravated by oral antibiotic amoxicillin/clavulanate (Augmentin) and now exponentially by herbicide glyphosate (Roundup).	Good Peter	Clinical nutrition ESPEN, (20180200) Vol. 23, pp. 171-183. Electronic Publication Date: 1 Dec 2017 Journal code: 101654592. E-ISSN: 2405-4577. L-ISSN: 2405-4577.	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear. This paper contains no new data. It uses computer algorithms to make associations that are not proved. It claims that glyphosate impacts methionine and tryptophan and ignores that these amino acids are essential for human diet because microbially derived amino acids are only available via coprophagy.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813438-01-1	Sex-dependent impact of Roundup on the rat gut microbiome.	Lozano Veronica L; Hennequin Didier; Panoff Jean-Michel; Seralini Gilles-Eric; Amiel Caroline Lozano Veronica L; Panoff Jean-Michel; Seralini Gilles-Eric; Amiel Caroline Defarge Nicolas; Rocque Louis-Marie; Mesnage Robin; de Vendomois Joel Spiroux; Panoff	Toxicology reports, (2018) Vol. 5, pp. 96-107. Electronic Publication Date: 19 Dec 2017 Journal code: 101630272. E-ISSN: 2214-7500. L-ISSN: 2214-7500. Report No.: PMC-PMC5977165.	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear. This study has a number of issues related to design: Rats are at the end of their life when feces were sampled. It is not clear of feces were sampled pre- or post mortem. Results are confounded by advanced age or even tumor status of these rats, predominantly mammary. The smaller than expected number of phyla may be related to age of the rats. Short-term responses are not surprising: cells in direct contact with a substance in a test tube (liquid medium) will respond differently than cells exposed to that same substance within their natural environment. So in vitro data usually show cells have a greater sensitivity to the substance than in vivo data. And within the intestinal environment there is much to dilute, diminish or mask the substance's effect. This diminished effect in vivo has been documented repeatedly for a large number of test substances.			
M-813318-01-1	The Ramazzini Institute 13-week pilot study on glyphosate and Roundup administered at human-equivalent dose to Sprague Dawley rats: effects on the microbiome	Mao, Qixing ; Manservigi, Fabiana ; Panzacchi, Simona ; Mandrioli, Daniele ; Menghetti, Ilaria ; Vornoli, Andrea ; Bua, Luciano ; Falcioni, Laura ; Lesseur, Corina ; Chen, Jia ; Belpoggi, Fiorella ; Hu, Jianzhong	Environmental Health , Vol. 17, 20180101 E-ISSN: 1476-069X DOI: 10.1186/s12940-018-0394-x Published by: BioMed Central, London	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear. In this publication there was no clinical evidence of alterations in activity or behavior in pups. Body weight, water and feed consumption both in dams and pups were no different across the groups. Litter sizes were fully comparable among groups". To identify changes in microbes with multiple analyses in groups of animals is not unexpected and not necessarily indicative for a specific effect of the active substance. Changes within all rats due to maturation are greater than the differences between treatment groups. Moreover there are several points limiting the significance of the results: 1) information to calculate dose is not in the paper and seems intentional, 2) ADI is not the same as exposure which averages 1% of the ADI, and clinical signs were by definition not observed at the NOAEL which is 100X greater than the ADI. Animals in these tox studies had gut microbes, 3) Claims of exposure via milk are unfounded. The stat analysis gives some differences but they do not put these changes into the context of whether they are normal.			
M-813565-01-1	Pilot study on the urinary excretion of the glyphosate metabolite aminomethylphosphonic acid and breast cancer risk: The Multiethnic Cohort study.	Franke Adrian A Li Xingnan; Lai Jennifer F Shvetsov Yuri B	Environmental pollution (Barking, Essex : 1987), (2021 May 15) Vol. 277, pp. 116848. Electronic Publication Date: 1 Mar 2021 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491. Report No.: PMC-PMC8044054; MID-NIHMS1684968.	Category C, articles of unclear relevance after detailed assessment	The relevance of this study for glyphosate is uncertain. Exposure was presumably to AMPA, from uncertain sources. The population investigated were mostly post-menopausal women who were participants in the Hawaii biospecimen subcohort of the Multi-ethnic Cohort.			
M-813575-01-1	Maternal urinary levels of glyphosate during pregnancy and anogenital distance in newborns in a US multicenter pregnancy cohort.	Lesseur Corina; Li Qian; Swan Shanna H Pirrotte Patrick; Pathak Khyatiben V Manservigi Fabiana Mandrioli Daniele; Belpoggi Fiorella; Panzacchi Simona Barrett Emily S Nguyen Ruby H N Sathyanarayana Sheela Chen Jia	Environmental pollution (Barking, Essex : 1987), (2021 Mar 22) Vol. 280, pp. 117002. Electronic Publication Date: 22 Mar 2021 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category C, articles of unclear relevance after detailed assessment	The relevance of this study for glyphosate is uncertain. First, it is unclear why the second trimester urine sample was selected for the analysis and whether it is representative of glyphosate and AMPA exposure during the etiologically relevant time period for affecting AGD. Second, it seems that chemicals and pesticides other than glyphosate were measured in urine (and blood) samples. Potential confounding from non-glyphosate exposures was not considered. Third, for female infants, there was a discrepancy between the results for the continuous and categorical analyses. In the former there were no significant results, while there were significant results in the categorical analyses. In general, dichotomizing at the median for highly positively skewed exposure variables does not create a clear exposure distinction between the groups being compared – both groups include primarily those with exposure values near the median. The discrepancy between the continuous and categorical analyses could be explained by those with the very highest exposure values having AGD similar to those with exposure values in the lower exposure group. It is obviously more informative to arrange comparison for groups that differ appreciably in the amount of exposure. Note also that there were no significant AGD findings for male infants. Lastly, the glyphosate and AMPA values are so low as to be of questionable biological plausibility given recent regulatory toxicology reviews for glyphosate and AMPA.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
2023965776_-Me	Occupational exposure to glyphosate and risk of lymphoma: results of an Italian multicenter case-control study.	Meloni Federico; Satta Giannina; Pilia Ilaria; Argiolas Alessandra; Zucca Mariagrazia; De Matteis Sara; Campagna Marcello; Cocco Pierluigi; Padoan Marina; Magnani Corrado; Montagna Andrea; Gambelunghe Angela; Muzi Giacomo; Piro Sara; Miligi Lucia; Ferri Giovanni Maria; Vimercati Luigi; Zanotti Roberta; Scarpa Aldo	Environmental health : a global access science source, (2021 Apr 28) Vol. 20, No. 1, pp. 49. Electronic Publication Date: 28 Apr 2021 Journal code: 101147645. E-ISSN: 1476-069X. L-ISSN: 1476-069X. Report No.: PMC-PMC8082925.	Category C, articles of unclear relevance after detailed assessment	The relevance of this study for glyphosate is uncertain. This study is a very low quality case control study for evaluating glyphosate. The exposure to various formulations of pesticides was not described clearly, but likely exposure to multiple pesticides for those with relevant occupations (i.e. mixture toxicity). The authors only controlled for age, gender, study centre, and education. There was no control for exposures other than glyphosate.			
M-806116-01-1	Pesticide dose estimates for children of Iowa farmers and non-farmers.	Curwin Brian D; Hein Misty J; Sanderson Wayne T; Striley Cynthia; Heederik Dick; Kromhout Hans; Reynolds Stephen J; Alavanja Michael C	Environmental research, (2007 Nov) Vol. 105, No. 3, pp. 307-15. Electronic Publication Date: 19 Jul 2007	Category C, articles of unclear relevance after detailed assessment	The study is providing only supplementary information for the risk assessment regarding biomonitoring data (urine) for children of farmers and non-farmers.			
M-813451-01-1	Effect of Occupational Exposure to Herbicides on Oxidative Stress in Sprayers.	Intayoung, Unchisa; Wunnapuk, Kintean; Kohsuwan, Kanyapak; Khacha-ananda, Supakit (correspondence) Saphamrer, Ratana Khacha-ananda, Supakit (correspondence)	Safety and Health at Work, (2020) . Refs: 40 ISSN: 2093-7911; E-ISSN: 2093-7997	Category C, articles of unclear relevance after detailed assessment	The underlying rationale for this study was that an increase in the urinary MDA level after a pesticide application would be indicative of a toxic effect of pesticides with potential future health consequences. In order to assess MDA levels related to an application, the authors used the collection and analysis of spot urine samples before and after a workday that involved application of either glyphosate alone (n = 52 or 56.0%), glyphosate and paraquat (n = 7 or 7.5%), or glyphosate and 2,4-D (n = 34, 36.5%). In essence, the authors were using a self-controlled pre/post study design with individuals acting as their own controls. The average difference between pre-application and post-application MDA values within the same individuals would serve as the basis for judging the impact of the on-study pesticide applications. The self-controlled results for workers in the 3 pesticide categories did not show a significant change in pre versus post workday MDA urinary levels. Therefore, one should conclude from those results that the pesticide applications did not increase MDA levels. Instead, the authors deviated from the self-controlled results and compared post work MDA levels for those who applied glyphosate and paraquat versus those who applied glyphosate alone. There is no pre-application baseline for this comparison and pre-application levels for these two groups differed appreciably (see Table 1). The post-workday comparison is not an evaluation of the on-study work and its effect on MDA levels. It should not be interpreted to conclude that the post-work difference in MDA levels across exposure categories indicates a joint effect of glyphosate and paraquat from the on-study applications. The comparison of relevance to the study's rationale is the self-controlled pre-work versus post-work comparison within pesticide classes. Other results showed that the (putatively protective) antioxidant enzyme GSH was not reduced for workers in any of the 3 pesticide categories. To conclude, this study did not show that glyphosate increases reactive oxygen species for pesticide workers or decreases potentially protective GSH levels. The relevance of these results for assessing glyphosate risk is uncertain.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-805370-01-1	Comparative genotoxicity of the herbicides Roundup, Stomp and Reglone in plant and mammalian test systems.	Dimitrov Boyan D; Gadeva Polina G; Benova Donka K; Bineva Maria V	Mutagenesis, (2006 Nov) Vol. 21, No. 6, pp. 375-82. Electronic Publication Date: 23 Sep 2006	Category C, articles of unclear relevance after detailed assessment	The study is providing only supplementary information for the risk assessment. Furthermore, no information on Roundup formulation (batch, adjuvants, expiration date, storage, analytics, purchaser) are given. There are uncertainties whether the test concentrations are in physiologically acceptable range (< 1mM) and the active ingredient content in oral doses is unclear.	Y	Y	Y
M-803577-01-1	Evaluation of the in vitro effect of glyphosate -based herbicide on bovine lymphocytes using chromosome painting.	Holeckova, B.	Bulletin of the Veterinary Institute in Puawy (2006) , Volume 50, Number 4, pp. 533-536, 29 refs. ISSN: 0042-4870 Published by: National Veterinary Research Institute, Puawy URL (Availability): http://www.pivet.pulawy.pl	Category C, articles of unclear relevance after detailed assessment	The induction of bovine chromosome 1 aberrations was investigated in cultivated peripheral lymphocytes of cattle after an application of a glyphosate-based herbicide formulation. A glyphosate product (glyphosate , approximate 62% by weight) with 38% inert			
M-803578-01-1	Genotoxic potential of glyphosate formulations: mode - of - action investigations.	Heydens William F; Healy Charles E; Hotz Kathy J; Kier Larry D; Martens Mark A; Wilson Alan G E; Farmer Donna R	Journal of agricultural and food chemistry, (2008 Feb 27) Vol. 56, No. 4, pp. 1517-23. Electronic Publication Date: 16 Jan 2008	Category C, articles of unclear relevance after detailed assessment	Genotox data on non-representative glyphosate formulation of unknown composition; relevance uncertain; Publication, no guideline/GLP study/mode of action study: clarifying contradictory results from other genotoxicity studies		Y	Y
M-807412-01-1	Hepatoma tissue culture (HTC) cells as a model for investigating the effects of low concentrations of herbicide on cell structure and function.	Malatesta M; Perdoni F; Santin G; Battistelli S; Muller S; Biggiogera M	Toxicology in vitro : an international journal published in association with BIBRA, (2008 Dec) Vol. 22, No. 8, pp. 1853-60. Electronic Publication Date: 18 Sep 2008	Category C, articles of unclear relevance after detailed assessment	In vitro study with Glyphosate formulation of unknown composition investigating the effects on modifications in mitochondrial functions and transcription/splicing pathways in hepatocytes. Pure active substance was not tested.	Y		

別添資料 2-2

適合性評価の第 2 段階で「区分 a」「区分 b」「区分 c」へ分類された文献リスト
及びその理由
(農作物及び畜産物への残留、Residues)

区分 a リスト	1～ 3 頁
区分 b リスト	4～11 頁
区分 c リスト	12～13 頁

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813215-01-1	Distribution of Glyphosate in Chicken Organs and its Reduction by Humic Acid Supplementation.	Shehata, Awad A. [Reprint Author]; Schroedl, Wieland; Sehledorn, Philipp; Krueger, Monika	Journal of Poultry Science, (JUL 2014) Vol. 51, No. 3, pp. 333-337. ISSN: 1346-7395.	Category A, Relevant & reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813112-01-1	Distribution of Chemical Residues among Fat, Skim, Curd, Whey, and Protein Fractions in Fortified, Pasteurized Milk	Shelver, Weilin L.; Lupton, Sara J.; Shappell, Nancy W.; Smith, David J.; Hakk, Heldur	ACS Omega, (2018) Vol. 3, No. 8, pp. 8697-8708. CODEN: ACSODF. ISSN: 2470-1343.	Category A, Relevant & reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812219-01-1	Effects of glyphosate residues and different concentrate feed proportions on performance, energy metabolism and health characteristics in lactating dairy cows.	Schnabel Karina; Schmitz Rolf; von Soosten Dirk; Frahm Jana; Kersten Susanne; Meyer Ulrich; Danicke Sven Schnabel Karina; Schmitz Rolf; Breves Gerhard Hackenberg Rudolf; Spitzke Madeleine	Archives of animal nutrition, (2017 Dec) Vol. 71, No. 6, pp. 413-427. Journal code: 101222433. E-ISSN: 1477-2817. L-ISSN: 1477-2817.	Category A, Relevant & reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812455-01-1	Excretion pathways and ruminal disappearance of glyphosate and its degradation product aminomethylphosphonic acid in dairy cows.	von Soosten D; Meyer U; Huthner L; Danicke S Lahrssen-Wiederholt M; Schaff H; Spolders M Breves G	Journal of dairy science, (2016 Jul) Vol. 99, No. 7, pp. 5318-5324. Electronic Publication Date: 20 Apr 2016 Journal code: 2985126R. E-ISSN: 1525-3198. L-ISSN: 0022-0302.	Category A, Relevant & reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812300-01-1	Occurrence of perchlorate, chlorate and polar herbicides in different baby food commodities.	Panseri Sara; Nobile Maria; Arioli Francesco; Chiesa Luca Maria Biolatti Cristina Pavlovic Radmila	Food chemistry, (2020 Jun 04) Vol. 330, pp. 127205. Electronic Publication Date: 4 Jun 2020 Journal code: 7702639, E-ISSN: 1873-7072. L-ISSN: 0308-8146.	Category A, Relevant & reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812223-01-1	Glyphosate residues in Swiss market foods: monitoring and risk evaluation.	Zoller Otmar; Rhyn Peter; Rupp Heinz; Zarn Jurg A; Geiser Christoph	Food additives & contaminants. Part B, Surveillance, (2018 Jun) Vol. 11, No. 2, pp. 83-91. Electronic Publication Date: 23 Jan 2018 Journal code: 101317183. E-ISSN: 1939-3229. L-ISSN: 1939-3210.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	4	A summary for this article is provided as an appendix.			
M-812284-01-1	Honeybee and consumer's exposure and risk characterisation to glyphosate-based herbicide (GBH) and its degradation product (AMPA); Residues in beebread, wax, and honey.	El Agrebi Noemie Tosi Simone Wilmart Olivier Scippo Marie-Louise de Graaf Dirk C Saegerman Claude	The Science of the total environment, (2020 Feb 20) Vol. 704, pp. 135312. Electronic Publication Date: 20 Nov 2019 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812257-01-1	Determination of glyphosate, AMPA, and glufosinate in honey by online solid-phase extraction-liquid chromatography-tandem mass spectrometry.	Thompson Thomas S; van den Heever Johan P; Limanowka Renata E	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment, (2019 Mar) Vol. 36, No. 3, pp. 434-446. Electronic Publication Date: 26 Feb 2019 Journal code: 101485040. E-ISSN: 1944-0057. L-ISSN: 1944-0057.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812258-01-1	Detection of glyphosate and its metabolites in food of animal origin based on ion-chromatography-high resolution mass spectrometry (IC-HRMS).	Chiesa Luca Maria; Nobile Maria; Panzeri Sara; Arioli Francesco	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment, (2019 Apr) Vol. 36, No. 4, pp. 592-600. Electronic Publication Date: 14 Mar 2019 Journal code: 101485040. E-ISSN: 1944-0057. L-ISSN: 1944-0057.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813450-01-1	Glyphosate residue concentrations in honey attributed through geospatial analysis to proximity of large-scale agriculture and transfer off-site by bees.	Berg Carl J King H Peter Delenstarr Glenda Kumar Ritikaa Rubio Fernando; Glaze Tom	PloS one, (2018) Vol. 13, No. 7, pp. e0198876. Electronic Publication Date: 11 Jul 2018 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC6040695.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-629607-01-1	Are pesticide residues in honey related to oilseed rape treatments?.	Karise Reet Raimets Risto; Williams Ingrid H; Mand Marika Bartkevics Vadims; Pugajeva Iveta Pihlik Priit; Viinalass Haldja Keres Indrek	Chemosphere, (2017 Dec) Vol. 188, pp. 389-396. Electronic Publication Date: 4 Sep 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812215-01-1	Survey of Glyphosate Residues in Honey, Corn and Soy Products	Rubio Fernando, Guo Emily and Kamp Lisa	Journal of Environmental and Analytical Toxicology (2014) 5: 249.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813568-01-1	No hints at glyphosate-induced ruminal dysbiosis in cows.	Billenkamp Fabian; Schnabel Karina; Huther Liane; Frahm Jana; von Soosten Dirk; Meyer Ulrich; Danicke Sven; Hoper Dirk; Beer Martin; Seyboldt Christian; Neubauer Heinrich	NPJ biofilms and microbiomes, (20210325) Vol. 7, No. 1, pp. 30. Electronic Publication Date: 25 Mar 2021 Journal code: 101666944, E-ISSN: 2055-5008. L-ISSN: 2055-5008. Report No.: PMC-PMC7994389.	Category B, Relevant but supplementary articles after detailed assessment	This is an experimental study to investigate potential detrimental effects of glyphosate on the cattle ruminal microbiome. Cows were fed with feedstuffs with strong differences in dietary fiber and concentrate feed proportion (CFP), either with or without glyphosate residues from pre-harvest treatment. The study is well conducted and analysed. The results show that glyphosate does not have adverse effects on the cattle ruminal microbiome, as it was previously suggested by in vitro studies. While the publication does not correspond to any specific EU data requirement it nevertheless includes interesting data indicating that the residues of glyphosate in cattle feed do not impact cattle ruminal microbiome.			
M-813562-01-1	Effects of glyphosate residues and different concentrate feed proportions in dairy cow rations on hepatic gene expression, liver histology and biochemical blood parameters.	Heymann Ann-Katrin; Schnabel Karina; Billenkamp Fabian; Buhler Susanne; Frahm Jana; Kersten Susanne; Huther Liane; Meyer Ulrich; von Soosten Dirk; Danicke Sven; Trakooljul Nares; Teifke Jens Peter	PloS one, (2021) Vol. 16, No. 2, pp. e0246679. Electronic Publication Date: 12 Feb 2021 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC7880452.	Category B, Relevant but supplementary articles after detailed assessment	This is an experimental study to investigate effects of glyphosate on the cattle hepatotoxic effects (61 lactating German Holstein cows). Cows were fed with feedstuffs with strong differences concentrate feed proportion (CFP), either with or without addition of glyphosate. The results show that glyphosate has no adverse effects on the liver of dairy cows (GLY-responsive gene expression/liver-related blood parameters).			
M-813580-01-1	Analysis of Microbiological and Chemical Hazards in Edible Insects Available to Canadian Consumers.	Kolakowski Beata Maria; Johaniuk Krystyna; Zhang Helen; Yamamoto Etsuko	Journal of food protection, (2021 May 06) . Electronic Publication Date: 6 May 2021 Journal code: 7703944, E-ISSN: 1944-9097. L-ISSN: 0362-028X.	Category B, Relevant but supplementary articles after detailed assessment	Monitoring data from Canada on pesticides in edible insects (crickets, silkworm, 47 samples). Glyphosate was detected in 36 samples (0.0064-0.15 mg/kg), AMPA was detected in 9 samples (0.007-0.45 mg/kg). Origin of residues unclear. At this timepoint this paper is not relevant for EU because no MRLs are set on insect derived food products.			
M-813547-01-1	Agrochemical Contamination of Honey and Bee Bread Collected in the Piedmont Region, Italy	Bergero, Marco ; Bosco, Luca ; Giacomelli, Alessandra ; Angelozzi, Giovanni ; Perugini, Monia ; Merola, Carmine	Environments, Vol. 8, No. 7, 20210101 E-ISSN: 2076-3298 DOI: 10.3390/environments8070062 Published by: MDPI AG, Basel	Category B, Relevant but supplementary articles after detailed assessment	Monitoring data from Piedmont (Italy) on pesticides in bee bread and honey (sampling from 4 apiaries). Glyphosate was the most abundant chemical found in bee bread and honey samples, with levels of <10-542 and 10-34 µg/kg, respectively.			
M-813525-01-1	Performance and mineral status of weaning pigs fed diets with different levels of glyphosate and tryptophan.	Krogh, Uffe; Hojberg, Ole; Foldager, Leslie; Rani, Sundas; Norskov, Natalja P.; Sorensen, Martin T. (correspondence) Foldager, Leslie	Livestock Science, (October 2021) Vol. 252. arn. 104681. Refs: 20 ISSN: 1871-1413	Category B, Relevant but supplementary articles after detailed assessment	This is an experimental study to investigate effects of glyphosate on performance and mineral status of weaning pigs (weight, feed intake and faeces score; intestine digesta, blood and urine analysis). Pigs were fed with weaning diet containing various concentrations (20 and 200 mg/kg) of glyphosate, at the highest concentration with and without addition of crystalline tryptophan. Neither feed intake, growth rate, serum mineral concentrations nor faeces score were significantly affected by level or source (pure glyphosate salt vs GBH) of the dietary glyphosate.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813543-01-1	Feed residues of glyphosate - potential consequences for livestock health and productivity.	Sorensen, M. T.; Poulsen, H. D.; Katholm, C. L.; Hojberg, O.	Animal (2021), Volume 15, Number 1, many ref. ISSN: 1751-7311; 1751-732X DOI: https://doi.org/10.1016/j.animal.2020.100026 Published by: Elsevier B.V., Amsterdam URL (Availability): https://www.sciencedirect.com/science/article/pii/S1751731120300264	Category B, Relevant but supplementary articles after detailed assessment	This is a literature review report on potential detrimental effects of glyphosate affect livestock gut microbiota and/or mineral status potentially with derived unfavourable effects on animal health and productivity. Some in vitro growth experiments were conducted with bacteria. Some differences were detected regarding the sensitivity of bacterial growth to glyphosate.			
M-812213-01-1	Uptake, Translocation, Metabolism, and Distribution of Glyphosate in Nontarget Tea Plant (<i>Camellia sinensis</i> L.).	Tong Mengmeng; Gao Wanjun; Jiao Weiting; Zhou Jie; Li Yeyun; Hou Ruyan He Lili	Journal of agricultural and food chemistry, (2017 Sep 06) Vol. 65, No. 35, pp. 7638-7646. Electronic Publication Date: 21 Aug 2017 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information on uptake and metabolism of glyphosate in tea plants after application in nutrient solution.			
M-813343-01-1	The presence of glyphosate in forest plants with different life strategies one year after application.	Wood, Lisa J. [Reprint Author]	Canadian Journal of Forest Research, (JUN 2019) Vol. 49, No. 6, pp. 586-594. CODEN: CJFRAR. ISSN: 0045-5067. E-ISSN: 1208-6037.	Category B, Relevant but supplementary articles after detailed assessment	In order to properly interpret the findings of the publication, it would be important to know the extent of the residues in the non-target crops shortly after application. However, this information is only available indirectly from other studies. According to the publication : "Compared with levels detected in forest plants immediately after application by Feng and Thompson (1990), levels detected in this study are very low." This means that the residues shortly after application were extremely high, far above the levels that may occur in non-target plants in Europe due to contamination by spray-drift. For this reason and after full text review, the publication is considered to be of limited relevance to the EU renewal dossier. It only provides supplementary information.			
M-813361-01-1	Pesticide residues evaluation of organic crops. A critical appraisal	Gomez-Ramos, Maria del Mar; Nannou, Christina; Martinez Bueno, Maria Jesus; Goday, Ana; Murcia-Morales, Maria; Ferrer, Carmen; Fernandez-Alba, Amadeo R.	Food Chemistry: X (2020), 5, 100079 CODEN: FCXOAO; ISSN: 2590-1575	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information only for CA 6.3 not altering the existing risk assessment. Analytical method development and optimisation for detection of multiple pesticides in crops with low LOQ. Monitoring data from 136 commercial organic samples showed no residues of glyphosate, n-acetyl glyphosate, AMPA, n-acetyl-AMPA. Origin of samples not fully described. For method validation it is relied on published data.			
2020_189054_-S	Assessment of Health Risk due to Pesticide Residues in Fruits, Vegetables, Soil, and Water	Khan, Nikhat ; Yaqub, Ghazala ; Hafeez, Tahreem ; Tariq, Madiha Editor(s): Zhang, Yifeng Zhang, Yifeng	Journal of Chemistry, Vol. 2020, 20200101 ISSN: 2090-9063; 2090-9063 E-ISSN: 2090-9071; 2090-9071 DOI: 10.1155/2020/5497952 Published by: Hindawi Limited, New York	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information only, does not alter the existing risk assessment / no consequences to RAR. Fruit, vegetable, soil and water samples from Pakistan were analysed for glyphosate residues (monitoring), with detects in fruits and vegetables. Missing validation data, analytical method and origin of samples not sufficiently described.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813529-01-1	The Persistence of Glyphosate in Vegetation One Year after Application	Edge, Christopher B. (Reprint); Heartz, Shane Brown, Marika Thompson, Dean Ritter, Len Ramadoss, Madhi	FORESTS, (2021 MAY 2021) Vol. 12, No. 5.	Category B, Relevant but supplementary articles after detailed assessment	The study describes two experiments conducted in Canada, where glyphosate was applied aerially at rates of 1.35-1.8 kg a.s./ha to forestry areas. Samples of vegetation browsed by deer, moose and bear were collected from sprayed and non-sprayed adjacent blocks (down-wind), and analysed for residues of glyphosate and AMPA. Overall, the studies demonstrate that trace levels of glyphosate persist in vegetation for up to one year after application, however, observed concentrations are unlikely to pose risk to wildlife.			
M-813532-01-1	Seeking justice, eating toxics: overlooked contaminants in urban community gardens	Malone, Melanie	AGRICULTURE AND HUMAN VALUES, (25 2021 JUN 2021) . ISSN: 0889-048X.	Category B, Relevant but supplementary articles after detailed assessment	This is a kind of monitoring study in urban community gardens (UCGs), where soil from nine UCGs around Seattle were sampled and analysed for As, Pb, glyphosate and AMPA, and total petroleum hydrocarbons (TPH). Glyphosate and AMPA were found preliminary at two sites. Maximum levels of glyphosate and AMPA were 0.108 and 0.613 mg/kg, respectively, with highest median values of 0.027 and 0.163 mg/kg.			
M-813218-01-1	Human health risks associated with residual pesticide levels in edible tissues of slaughtered cattle in Benin City, Southern Nigeria.	Tango, Isioma (correspondence); Ezemonye, Lawrence	Toxicology Reports, (October 01, 2015) Vol. 2, pp. 1117-1135. Refs: 94 ISSN: 2214-7500	Category B, Relevant but supplementary articles after detailed assessment	Provides information on the relative residue levels in various edible cattle tissues but since the exposure of the cattle is not known no transfer factors can be derived.			
M-813535-01-1	Fate of glyphosate in wheat during milling and bread production. Focus Issue: Grain and grain-based food safety.	Tittlemier, S. A.; Bestvater, L.; Carlson, J.; Kletke, J.; Izydorczyk, M.; Fu BinXiao; Fu, B. X.	Cereal Chemistry (2020), Volume 98, Number 1, pp. 100-108, 20 refs. ISSN: 1943-3638 DOI: https://doi.org/10.1002/cche.10369 Published by: Wiley, Hoboken URL (Availability): https://onlinelibrary.wiley.com/doi/10.1002/cche.10369	Category B, Relevant but supplementary articles after detailed assessment	Processing study of wheat from Canada; only glyphosate was detected, no residues of AMPA. On average, in the pearling process 50% of glyphosate resided in the outer 17% of the kernels, while in the milling process 81% of glyphosate in the wheat was associated with the bran, shorts, and feeds milling fractions. No changes in glyphosate concentration (corrected for moisture content) were observed during the preparation of dough, fermented dough, and bread. No endpoint is derived, this study is considered supportive for processing of wheat, however no clear processing factors can be derived.			
M-813364-01-1	Fate of glyphosate in wheat during milling and bread production	Tittlemier, Sheryl A.; Bestvater, Lianna; Carlson, Jules; Kletke, Jerry; Izydorczyk, Marta; Fu, Bin Xiao	Cereal Chemistry (2020) Ahead of Print CODEN: CECHAF; ISSN: 1943-3638	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information only. No endpoint is derived. The study does not alter the existing risk assessment. This study is considered supportive for processing of wheat, however no clear processing factors can be derived. Absence of validation data in different processed wheat matrices. For the analytical method it is referred to another publication (Tittlemier et al., 2017).			
M-812503-01-1	Fast analysis of glufosinate, glyphosate and its main metabolite, aminomethylphosphonic acid, in edible oils, by liquid chromatography coupled with electrospray tandem mass spectrometry.	Chiarello, Marilda; Luisa Jimenez-Medina, Maria; Marin Saez, Jesus; Moura, Sidnei; Garrido Frenich, Antonia; Romero-Gonzalez, Roberto [Reprint Author]	Food Additives and Contaminants Part A-Chemistry Analysis Control Exposure & Risk Assessment, (SEP 2 2019) Vol. 36, No. 9, pp. 1376-1384. http://www.tandfonline.com/loi/tfac20 ISSN: 1944-0049. E-ISSN: 1944-0057.	Category B, Relevant but supplementary articles after detailed assessment	Residue analytical method. Olive oil is relevant to the uses considered for renewal in the EU. But only few real samples analysed and all showed residues < LOQ which can be predicted from the physical-chemical properties of glyphosate and AMPA.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-806717-01-1	Effects of processing and cooking on the levels of pesticide residues in soybean samples.	Saka, Machiko; Iijima, Kazuaki; Nishida, Mayumi; Koma, Yukiko; Hasegawa, Naomi; Sato, Kiyoshi; Kato, Yasuhiro	Shokuhin Eiseigaku Zasshi, (JUN 2008) Vol. 49, No. 3, pp. 160-167.	Category B, Relevant but supplementary articles after detailed assessment	It provides the information on Pfs that can be used supportive of setting the MRLs. However, in the current Japanese MRL setting system, the MRL for soybean is set for RAC and Pfs for soy bean products are not reflected into the dietary risk assessment.			
M-812505-01-1	Estimated exposure to glyphosate in humans via environmental, occupational, and dietary pathways: an updated review of the scientific literature. Special Issue: Glyphosate exposure and toxicology.	Solomon, K. R.	Pest Management Science (2020), Volume 76, Number 9, pp. 2878-2885 ISSN: 1526-498X DOI: 10.1002/ps.5717 Published by: Wiley, Chichester URL (Availability): https://onlinelibrary.wiley.com/doi/10.1002/ps.5717	Category B, Relevant but supplementary articles after detailed assessment	The article provides only supplemental information, which does not alter existing risk assessment. No endpoint was derived. Extended risk assessment using published exposure data for air, water, bystanders, the general public, domesticated animals, pets, and applicators. Based on this large dataset, no risk to any exposure pathway/group was identified. The article is reliable with respect to risk assessment methodologies applied, i.e. well described methodologies and data set for analysis.			
M-813534-01-1	Exposure assessment of glyphosate residues in soy-based infant formulas from the Brazilian market	de Souza, Ana Paula Ferreira; Ferreira, Giovanna Sevilha; Pagliarini, Felipe Santos; Rodrigues, Nadia Regina	Journal für Verbraucherschutz und Lebensmittelsicherheit: Journal of consumer protection and food safety (Mar 2021), Volume 16, Number 1, pp. 45-50, 6 p. ISSN: 1661-5751 Source Note: 202103, v. 16, no. 1	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate and AMPA residues were found in Brazilian infant formulas produced with soy extract and/or protein. The residue levels found in the analysed samples are not relevant to the representative EU uses supported in the AIR dossier. Based on the monitoring data, a risk assessment has been conducted for infants (0-5 months and 6-11 months age). The study might support the provided risk assessments to show absence of consumer risk due to GLY/AMPA residues.			
M-813527-01-1	Estimated dietary exposure to pesticide residues based on organic and conventional data in omnivores, pesco-vegetarians, vegetarians and vegans	Baudry, Julia; Rebouillat, Pauline; Alles, Benjamin; Cravedi, Jean-Pierre; Touvier, Mathilde; Hercberg, Serge; Lairon, Denis; Vidal, Rodolphe; Kesse-Guyot, Emmanuelle	Food and Chemical Toxicology (2021), 153, 112179 CODEN: FCTOD7; ISSN: 0278-6915	Category B, Relevant but supplementary articles after detailed assessment	This is a dietary risk assessment study to investigate uptake of reissues (incl glyphosate) by different population groups, including omnivores, pesco-vegetarians, vegetarians and vegans, with further distinction between intake of conventional or organic food source. Highest glyphosate intakes of glyphosate were calculated for vegans consuming conventional food (0.0264 µg/kg bw/day), with highest contributor legume vegetables.			
M-813606-01-1	Residues of glyphosate in food and dietary exposure.	Vicini John L; Jensen Pamela K; Young Bruce M; Swarthout John T	Comprehensive reviews in food science and food safety, (2021 Aug 16) . Electronic Publication Date: 16 Aug 2021 Journal code: 101305205. E-ISSN: 1541-4337. L-ISSN: 1541-4337.	Category B, Relevant but supplementary articles after detailed assessment	This is a literature review article with focus on 1) analytical methods for glyphosate and AMPA, 2) MRL and monitoring data (market surveys) and 3) dietary risk assessment. It reflects a well written summary of available knowledge and regulatory requirements/assessments.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813595-01-1	Establishment of a HPLC-MS/MS Detection Method for Glyphosate, Glufosinate-Ammonium, and Aminomethyl Phosphoric Acid in Tea and Its Use for Risk Exposure Assessment.	Wang Yong; Gao Wanjun; Li Yeyun; Hou Ruyan Wang Yong; Yao Ting; Cheng Manhuan; Wang Wenjuan Xiao Yu; Song Wei	Journal of agricultural and food chemistry, (2021 Jul 21) Vol. 69, No. 28, pp. 7969-7978. Electronic Publication Date: 7 Jul 2021 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Category B, Relevant but supplementary articles after detailed assessment	The article describes 1) development and optimisation of an analytical method for the determination of glyphosate, AMPA and glufosinate-ammonium, 2) monitoring of tea samples (n = 780) from China, and 3) risk assessment (deterministic and probabilistic) from consumption of teas. The results showed that exposure to PMG, GLU and AMPA caused by drinking tea beverages poses no significant risk to human health.			
M-812457-01-1	Analysis of Glyphosate and Aminomethylphosphonic Acid in Nutritional Ingredients and Milk by Derivatization with Fluorenylmethyloxycarbonyl Chloride and Liquid Chromatography-Mass Spectrometry.	Ehling Stefan; Reddy Todime M	Journal of agricultural and food chemistry, (2015 Dec 09) Vol. 63, No. 48, pp. 10562-8. Electronic Publication Date: 23 Nov 2015 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Category B, Relevant but supplementary articles after detailed assessment	Selected analysis of samples that provide confirmatory results.			
M-812230-01-1	Occurrence of glyphosate in beer from the Latvian market.	Jansons Martins Jansons Martins; Pugajeva Iveta; Bartkevics Vadims	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment, (2018 Sep) Vol. 35, No. 9, pp. 1767-1775. Electronic Publication Date: 2 Aug 2018 Journal code: 101485040. E-ISSN: 1944-0057. L-ISSN: 1944-0057.	Category B, Relevant but supplementary articles after detailed assessment	Includes information on residues in beer. Not directly relevant to dietary risk assessment but provides supplemental information.			
M-597789-01-1	Quantifying dietary exposure to pesticide residues using spraying journal data	Larsson, Martin Olof; Nielsen, Vibe Sloth; Brandt, Christian Oersted; Bjerre, Niels; Laporte, Frank; Cedergreen, Nina	Food and Chemical Toxicology, (2017) Vol. 105, pp. 407-428. CODEN: FCTOD7. ISSN: 0278-6915.	Category B, Relevant but supplementary articles after detailed assessment	Estimate of glyphosate exposure based on spray data in DK. Supplemental to risk assessment.			
M-640535-01-1	Refined assessment and perspectives on the cumulative risk resulting from the dietary exposure to pesticide residues in the Danish population	Larsson, Martin Olof; Sloth Nielsen, Vibe; Bjerre, Niels; Laporte, Frank; Cedergreen, Nina	Food and Chemical Toxicology, (2018) Vol. 111, pp. 207-267. CODEN: FCTOD7. ISSN: 0278-6915.	Category B, Relevant but supplementary articles after detailed assessment	Refined dietary risk assessment for Danish population. Supplementary to DRA included in submission.			
M-812492-01-1	Validation and application of analytical method for glyphosate and glufosinate in foods by liquid chromatography-tandem mass spectrometry.	Liao Yang Berthion Jean-Marie; Colet Isabelle Merlo Mathilde; Nougadere Alexandre Hu Renwei	Journal of chromatography. A, (2018 May 11) Vol. 1549, pp. 31-38. Electronic Publication Date: 20 Mar 2018 Journal code: 9318488. E-ISSN: 1873-3778. L-ISSN: 0021-9673.	Category B, Relevant but supplementary articles after detailed assessment	This is primarily an analytical method paper, but does include EU monitoring results on 136 food samples (only 2 detects).			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813145-01-1	Estimating maternal and prenatal exposure to glyphosate in the community setting.	McQueen Heather Callan Anna C; Hinwood Andrea L	International journal of hygiene and environmental health, (2012 Nov) Vol. 215, No. 6, pp. 570-6. Electronic Publication Date: 18 Jan 2012 Journal code: 100898843. E-ISSN: 1618-131X. L-ISSN: 1438-4639.	Category B, Relevant but supplementary articles after detailed assessment	Study estimated dietary exposure of pregnant women to glyphosate by survey and food analysis Exposure is well within the National Estimated Daily Intake.	Y		
M-812158-01-1	Results from the Danish monitoring programme for pesticide residues from the period 2004-2011	Poulsen, Mette Erecius; Andersen, Jens H.; Petersen, Annette; Jensen, Bodil H.	Food Control (2017), 74, 25-33 CODEN: FOOCEV; ISSN: 0956-7135	Category B, Relevant but supplementary articles after detailed assessment	Summary of EU monitoring data.			
M-518146-01-1	Pesticide residues in food of plant origin from Southeast Asia - A Nordic project	Skretteberg, L. G.; Lyraa, B.; Holen, B.; Jansson, A.; Fohgelberg, P.; Siivinen, K.; Andersen, J. H.; Jensen, B. H.	Food Control, (2015) Vol. 51, pp. 225-235. CODEN: FOOCEV. ISSN: 0956-7135.	Category B, Relevant but supplementary articles after detailed assessment	Monitoring data that may be relevant to the actual exposure of EU consumers to glyphosate residues. But non EU data, therefore, not directly linked to the representative uses.			
M-812467-01-1	An assessment of dietary exposure to glyphosate using refined deterministic and probabilistic methods.	Stephenson C L Harris C A	Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association, (2016 Sep) Vol. 95, pp. 28-41. Electronic Publication Date: 28 Jun 2016 Journal code: 8207483. E-ISSN: 1873-6351. L-ISSN: 0278-6	Category B, Relevant but supplementary articles after detailed assessment	Refined dietary risk assessment.			
M-812162-01-1	Glyphosate and aminomethylphosphonic acid (AMPA) residues in Brazilian honey	de Souza, Ana Paula Ferreira; Rodrigues, Nadia Regina; Reyes, Felix Guillermo Reyes	Food Additives & Contaminants, Part B: Surveillance (2020) Ahead of Print CODEN: FACPBB; ISSN: 1939-3210	Category B, Relevant but supplementary articles after detailed assessment	Glyphosate residues were found in Brazilian honey (HR = 0.22 mg/kg). An AMPA residue of 0.1 mg/kg was detected in one sample. The residue levels found in the analysed samples are not directly relevant to the EU uses supported in the AIR dossier. However, the data may be useful to interpret the results of the EU monitoring data for glyphosate residues in honey.			
M-813359-01-1	Monitoring and risk assessment due to presence of metals and pesticides residues in honey samples from the major honey producing forest belts and different brands.	Ghazala Yaqub; Mariyam Khalid; Ayeza Ikram; Aimen Sohail	Food Science and Technology (Campinas) (2020), Volume 40, Number Suppl. 1, pp. 331-335, 28 refs. ISSN: 0101-2061 DOI: 10.1590/fst.01919 Published by: Sociedade Brasileira de Ciencia e Tecnologia de Alimentos, Campinas URL (Availability): https://www.scielo.br/pdf/cta/v40s1/0101-2061-cta-fst01919.pdf	Category B, Relevant but supplementary articles after detailed assessment	25 samples of different national (Pakistan) and international honey brands were collected for analysis of residues of heavy metals and pesticides. Glyphosate residues were detected in 5 samples in a range of 0.44 - 3.5 mg/kg (ppm). The residue levels found in the analysed samples are not directly relevant to the EU uses supported in the AIR dossier. However, the data may be useful to interpret the results of the EU monitoring data for glyphosate residues in honey.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813553-01-1	Pesticides and Environmental Contaminants in Organic Honeys According to Their Different Productive Areas toward Food Safety Protection.	Panseri Sara; Nobile Maria; Di Cesare Federica; Mosconi Giacomo; Arioli Francesco; Chiesa Luca Bonerba Elisabetta Cecati Francisco Tantillo Giuseppina	Foods (Basel, Switzerland), (2020 Dec 14) Vol. 9, No. 12. Electronic Publication Date: 14 Dec 2020 Journal code: 101670569. ISSN: 2304-8158. L-ISSN: 2304-8158. Report No.: PMC-PMC7764946.	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information only, not altering the existing risk assessment. Monitoring data from organic honey samples (n = 98) collected in Italy (Apulia) during 2019-2020. Residues of glyphosate, AMPA and glufosinate were not found in any sample. References are provided to validation of analytical methods. Source of honey samples are not exactly described.			
M-813366-01-1	Study regarding the honey contamination degree assessed in a specialized production unit.	Petcu, C. D.; Ciobotaru-Pirvu, E.; Ghimpeteanu, O. M.; Goran, G. V.; Predescu, C. N.; Op, O. D.	Scientific Papers, Series D. Animal Science (2020), Volume 63, Number 1, pp. 442-449, 37 refs. ISSN: 2285-5750 Published by: University of Agronomic Sciences and Veterinary Medicine of Bucharest, Bucharest URL (Availability): http://animalsciencejournal.usamv.ro/pdf/2020/issue_1/vol2020_1.pdf	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information only, not altering the existing risk assessment. Samples from "honey sourced from beekeepers from the centre and Southern Romania (in order to form a large and homogeneous batch)" were analysed. Analysis done by LC-MS/MS with poor method description and no validation data. Residues of glyphosate were below the limit of quantification (<0.01 mg/kg) in 15 acacia and 15 polyfloral honey samples.			
M-813328-01-1	Content of pesticide residues in the flowers of the acacia and linden trees from the Moldavian Codri area.	Cebotari, V.; Buzu, I.; Gliga, O.; Postolachi, O.; Granciu, N.	Scientific Papers, Series D. Animal Science (2018), Volume 61, Number 2, pp. 235-242, 28 refs. ISSN: 2285-5750 Published by: University of Agronomic Sciences and Veterinary Medicine of Bucharest, Bucharest URL (Availability): http://animalsciencejournal.u	Category B, Relevant but supplementary articles after detailed assessment	The publication is considered to only provide supplementary information that is not directly relevant to MRL setting and risk assessment. The residue levels found in linden flower would trigger the need for a honey residue study and cannot be used to directly estimate an MRL. The method used to determine the residues of glyphosate in flowers is not described in the publication and no validation data are provided.			
M-812507-01-1	Penetration of glyphosate into the food supply and the incidental impact on the honey supply and bees.	Ledoux, Michelle L.; Hettiarachchy, Navam [Reprint Author]; Yu, Xiaofan; Howard, Luke; Sun-Ok, Lee	Food Control, (MAR 2020) Vol. 109. http://www.journals.elsevier.com/food-control/#description . ISSN: 0956-7135. E-ISSN: 1873-7129.	Category B, Relevant but supplementary articles after detailed assessment	This publication is a review and does not provide any original data, but summarizes relevant data on honey.			
M-812235-01-1	Evaluation of glyphosate and AMPA in honey by water extraction followed by ion chromatography mass spectrometry. A pilot monitoring study	Pareja, Lucia; Florencia Jesus; Horacio Heinzen; Maria Dolores Hernando; Lukasz Rajski; Amadeo R Fernandez-Alba	Analytical methods (2019), Volume 11, Number 16, pp. 2123-2128 ISSN: 1759-9679 Published by: The Royal Society of Chemistry Source Note: 2019 Apr. 18, v. 11, no. 16	Category B, Relevant but supplementary articles after detailed assessment	This is primarily an analytical method paper, but does include information on analysis of collected samples.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812218-01-1	Pesticide residues in beehive matrices are dependent on collection time and matrix type but independent of proportion of foraged oilseed rape and agricultural land in foraging territory	Raimets, Risto; Bontsutsnaja, Anna; Bartkevics, Vadims; Pugajeva, Iveta; Kaart, Tanel; Puusepp, Liisa; Pihlik, Priit; Keres, Indrek; Viinalass, Haldja; et al.	Chemosphere, (2020) Vol. 238, pp. 124555pp.. CODEN: CSMHAF. ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	The data are over-summarized. Only the percentage of samples with detectable / quantifiable residues, the median and the maximum residues are provided and it is not clear how many samples were analysed. Furthermore, it seems that the same data were already published (with more details) in a previous article (Karise R. et al., 2017). Therefore, the publication is considered to only provide supplementary information that is not directly relevant to MRL setting and risk assessment.			
M-813197-01-1	Evaluating exposure and potential effects on honeybee brood (Apis mellifera) development using glyphosate as an example.	Thompson Helen M Levine Steven L; Doering Janine; Norman Steve; Manson Philip; Sutton Peter; von Merey Georg	Integrated environmental assessment and management, (2014 Jul) Vol. 10, No. 3, pp. 463-70. Electronic Publication Date: 19 May 2014 Journal code: 101234521. E-ISSN: 1551-3793. L-ISSN: 1551-3777. Report No.: NLM-PMC4285224; PMC-PMC4285224.	Category B, Relevant but supplementary articles after detailed assessment	No MRLs are currently set for presented commodities and these commodities are not considered for dietary risk assessment either. Therefore, the findings do not directly impact the consumer risk assessment.			Y
M-812276-01-1	Herbicide determination in Brazilian propolis using high pressure liquid chromatography.	Umsza-Guez M A Silva-Beltran N P Machado B A S Balderrama-Carmona A P	International journal of environmental health research, (2019 Oct 01) pp. 1-11. Electronic Publication Date: 1 Oct 2019 Journal code: 9106628. E-ISSN: 1369-1619. L-ISSN: 0960-3123.	Category B, Relevant but supplementary articles after detailed assessment	Currently no EU MRL is set for propolis and since propolis is not taken into account for dietary risk assessment in the EU. Because of that and due to the reliability of the analytical method is not clearly established the publication is considered supplementary.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812432-01-1	The influence of glyphosate on the microbiota and production of botulinum neurotoxin during ruminal fermentation.	Ackermann Wagis Coenen Manfred; Schrodli Wieland; Shehata Awad A; Kruger Monika	Current microbiology, (2015 Mar) Vol. 70, No. 3, pp. 374-82. Electronic Publication Date: 19 Nov 2014 Journal code: 7808448. E-ISSN: 1432-0991. L-ISSN: 0343-8651.	Category C, articles of unclear relevance after detailed assessment	The system used in this study was not developed for microbiology research. Instead it was developed for comparing rates of digestion of feed. It is not a dynamic system like a rumen but a batch culture system. In 48 hrs they showed that adding glyphosate resulted in greater drops in pH that were not adequately buffered. Their endpoints are consistent with decreased pH. They are not consistent with more sophisticated rumen simulation techniques that found no effects from glyphosate.		Y	
M-813478-01-1	Effect of a Glyphosate-Containing Herbicide on Escherichia coli and Salmonella Ser. Typhimurium in an In Vitro Rumen Simulation System.	Bote Katrin; Poppe Judith; Roesler Uwe Riede Susanne; Breves Gerhard	European journal of microbiology & immunology, (2019 Oct 03) Vol. 9, No. 3, pp. 94-99. Electronic Publication Date: 27 Jun 2019 Journal code: 101569896. ISSN: 2062-509X. L-ISSN: 2062-509X. Report No.: PMC-PMC6798580.	Category C, articles of unclear relevance after detailed assessment	The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. Therefore, the relevance of the publication is unclear. In the absence of a suitable dossier datapoint it was allocated to point KCA 6.4 since it concerns livestock. However, it is important to note that it is not a residue study and does not provide any data on the transfer of residues from feed to food of animal origin.			
M-813211-01-1	Oral application of charcoal and humic acids to dairy cows influences Clostridium botulinum blood serum antibody level and glyphosate excretion in urine.	Gerlach, H.; Gerlach, A.; Schroedl, W.; Schottorf, B.; Haufe, S.; Helm, H.; Shehata, A.; Krueger, M.	Journal of Clinical Toxicology (2014), Volume 4, Number 2, 186 p., 47 refs. ISSN: 2161-0495 Published by: OMICS Publishing Group, Los Angeles URL (Availability): http://omicsonline.org/open-access/oral-application-of-charcoal-and-humic-acids-to-dairy-cow	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear.			
M-812214-01-1	Glyphosate has limited short-term effects on commensal bacterial community composition in the gut environment due to sufficient aromatic amino acid levels	Nielsen, Lene NA.cdll.rby; Henrik L Frandsen; Henrik M Roager; Kai Bester; MA2nica Escola Casas; Martin Iain Bahl; Niels Bohse Hendriksen; Tine Rask Licht; Ulrich Gosewinkel	Environmental pollution (2017) ISSN: 0269-7491 Published by: Elsevier Ltd Source Note: 2017,	Category C, articles of unclear relevance after detailed assessment	The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. Therefore, the relevance of the publication is unclear.			
M-812465-01-1	Investigations on the possible impact of a glyphosate-containing herbicide on ruminal metabolism and bacteria in vitro by means of the 'Rumen Simulation Technique'.	Riede S; Breves G Toboldt A; Braunig J; Schafft H; Lahrssen-Wiederholt M; Niemann L Metzner M; Kohler B	Journal of applied microbiology, (2016 Sep) Vol. 121, No. 3, pp. 644-56. Electronic Publication Date: 21 Jul 2016 Journal code: 9706280. E-ISSN: 1365-2672. L-ISSN: 1364-5072.	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear. Used a system developed for studying ruminal organisms that is dynamic, used mixed population of microbes and is periodically fed with removal of waste products. No impacts of glyphosate formulation			
M-812419-01-1	Possible effects of glyphosate on Mucorales abundance in the rumen of dairy cows in Germany.	Schrodli Wieland Kruger Susanne; Konstantinova-Muller Theodora; Shehata Awad A; Rulff Ramon; Kruger Monika	Current microbiology, (2014 Dec) Vol. 69, No. 6, pp. 817-23. Electronic Publication Date: 31 Jul 2014 Journal code: 7808448. E-ISSN: 1432-0991. L-ISSN: 0343-8651.	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear. Methodological shortcomings of the approaches used reduce the significance of the results (rumen fungi are strictly anaerobic, but they use aerobic cultures; 2) spot-urine concentrations are highly affected by the level of milk production 3) the ELISA is not validated and the LOD was not used, no validation is described for other assays.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812406-01-1	Neutralization of the antimicrobial effect of glyphosate by humic acid in vitro.	Shehata Awad A Kuhnert Manfred; Haufe Svent Kruger Monika	Chemosphere, (2014 Jun) Vol. 104, pp. 258-61. Electronic Publication Date: 20 Nov 2013 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category C, articles of unclear relevance after detailed assessment	The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. Therefore, the relevance of the publication is unclear. In the absence of a suitable dossier datapoint it was allocated to point KCA 6.4 since it concerns livestock. However, it is important to note that it is not a residue study and does not provide any data on the transfer of residues from feed to food of animal origin.		Y	
M-812386-01-1	The effect of glyphosate on potential pathogens and beneficial members of poultry microbiota in vitro.	Shehata Awad A Schrodl Wieland; Aldin Alaa A; Hafez Hafez M; Kruger Monika	Current microbiology, (2013 Apr) Vol. 66, No. 4, pp. 350-8. Electronic Publication Date: 9 Dec 2012 Journal code: 7808448. E-ISSN: 1432-0991. L-ISSN: 0343-8651.	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear. The publication does not provide new information (potential effects on microorganisms with sensitive EPSPS are well known) and real world conditions of the gut are not replicated (study conducted on minimal media; microorganisms exposed to extremely high doses of glyphosate (1000x); long-time cultures inducing additional stress).		Y	
M-813475-01-1	Glyphosate in livestock: feed residues and animal health.	Vicini John L Reeves William R; Swarthout John T; Karberg Katherine A	Journal of animal science, (2019 Nov 04) Vol. 97, No. 11, pp. 4509-4518. Journal code: 8003002. E-ISSN: 1525-3163. L-ISSN: 0021-8812. Report No.: PMC-PMC6827263.	Category C, articles of unclear relevance after detailed assessment	The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. Therefore, the relevance of the publication is unclear.			
M-812362-01-1	Effects of Roundup® and glyphosate on three food microorganisms: Geotrichum candidum, Lactococcus lactis subsp. cremoris and Lactobacillus delbrueckii subsp. bulgaricus.	Clair Emilie Linn Laura; Travert Carine; Amiel Caroline; Seralini Gilles-Eric; Panoff Jean-Michel	Current microbiology, (2012 May) Vol. 64, No. 5, pp. 486-91. Electronic Publication Date: 24 Feb 2012 Journal code: 7808448. E-ISSN: 1432-0991. L-ISSN: 0343-8651.	Category C, articles of unclear relevance after detailed assessment	Potential effects on microorganism e.g. food microorganisms widely used as starters in dairy technologies are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified in the form of official guidance/ test systems, thus relevance of these effects for the risk assessments remained unclear. However, based on the results presented, it is not possible to come to a scientifically sound conclusion that the ability to make cheese using these organisms has been compromised by Round formulations. Application dilutions (1%) of glyphosate were shown to inhibit a yeast-like organism, which is unsurprising. Surfactant solutions are routinely used to sanitize food processing equipment at concentrations at or above those tested by Clair et al. These concentrations are vastly higher than the concentrations of glyphosate or possible surfactant present (if any) in incoming milk.		Y	

別添資料 2-3

適合性評価の第 2 段階で「区分 a」「区分 b」「区分 c」へ分類された文献リスト
及びその理由

(生活環境動植物及び家畜に対する毒性、Ecotoxicology)

区分 a リスト 1～ 3 頁

区分 b リスト 4～36 頁

区分 c リスト 37～38 頁

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813215-01-1	Distribution of Glyphosate in Chicken Organs and its Reduction by Humic Acid Supplementation.	Shehata, Awad A. [Reprint Author]; Schroedl, Wieland; Sehledorn, Philipp; Krueger, Monika	Journal of Poultry Science, (JUL 2014) Vol. 51, No. 3, pp. 333-337. ISSN: 1346-7395.	Category A, Relevant & reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813112-01-1	Distribution of Chemical Residues among Fat, Skim, Curd, Whey, and Protein Fractions in Fortified, Pasteurized Milk	Shelver, Weilin L.; Lupton, Sara J.; Shappell, Nancy W.; Smith, David J.; Hakk, Heldur	ACS Omega, (2018) Vol. 3, No. 8, pp. 8697-8708. CODEN: ACSODF. ISSN: 2470-1343.	Category A, Relevant & reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812219-01-1	Effects of glyphosate residues and different concentrate feed proportions on performance, energy metabolism and health characteristics in lactating dairy cows.	Schnabel Karina; Schmitz Rolf; von Soosten Dirk; Frahm Jana; Kersten Susanne; Meyer Ulrich; Danicke Sven Schnabel Karina; Schmitz Rolf; Breves Gerhard Hackenberg Rudolf; Spitzke Madeleine	Archives of animal nutrition, (2017 Dec) Vol. 71, No. 6, pp. 413-427. Journal code: 101222433. E-ISSN: 1477-2817. L-ISSN: 1477-2817.	Category A, Relevant & reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812455-01-1	Excretion pathways and ruminal disappearance of glyphosate and its degradation product aminomethylphosphonic acid in dairy cows.	von Soosten D; Meyer U; Huthner L; Danicke S Lahrssen-Wiederholt M; Schaffit H; Spolders M Breves G	Journal of dairy science, (2016 Jul) Vol. 99, No. 7, pp. 5318-5324. Electronic Publication Date: 20 Apr 2016 Journal code: 2985126R. E-ISSN: 1525-3198. L-ISSN: 0022-0302.	Category A, Relevant & reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812300-01-1	Occurrence of perchlorate, chlorate and polar herbicides in different baby food commodities.	Panseri Sara; Nobile Maria; Arioli Francesco; Chiesa Luca Maria Biolatti Cristina Pavlovic Radmila	Food chemistry, (2020 Jun 04) Vol. 330, pp. 127205. Electronic Publication Date: 4 Jun 2020 Journal code: 7702639, E-ISSN: 1873-7072. L-ISSN: 0308-8146.	Category A, Relevant & reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812223-01-1	Glyphosate residues in Swiss market foods: monitoring and risk evaluation.	Zoller Otmar; Rhyn Peter; Rupp Heinz; Zarn Jurg A; Geiser Christoph	Food additives & contaminants. Part B, Surveillance, (2018 Jun) Vol. 11, No. 2, pp. 83-91. Electronic Publication Date: 23 Jan 2018 Journal code: 101317183. E-ISSN: 1939-3229. L-ISSN: 1939-3210.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	4	A summary for this article is provided as an appendix.			
M-812284-01-1	Honeybee and consumer's exposure and risk characterisation to glyphosate-based herbicide (GBH) and its degradation product (AMPA); Residues in beebread, wax, and honey.	El Agrebi Noemie Tosi Simone Wilmart Olivier Scippo Marie-Louise de Graaf Dirk C Saegerman Claude	The Science of the total environment, (2020 Feb 20) Vol. 704, pp. 135312. Electronic Publication Date: 20 Nov 2019 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812257-01-1	Determination of glyphosate, AMPA, and glufosinate in honey by online solid-phase extraction-liquid chromatography-tandem mass spectrometry.	Thompson Thomas S; van den Heever Johan E P; Limanowka Renata E	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment, (2019 Mar) Vol. 36, No. 3, pp. 434-446. Electronic Publication Date: 26 Feb 2019 Journal code: 101485040. E-ISSN: 1944-0057. L-ISSN: 1944-0057.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812258-01-1	Detection of glyphosate and its metabolites in food of animal origin based on ion-chromatography-high resolution mass spectrometry (IC-HRMS).	Chiesa Luca Maria; Nobile Maria; Panzeri Sara; Arioli Francesco	Food additives & contaminants. Part A, Chemistry, analysis, control, exposure & risk assessment, (2019 Apr) Vol. 36, No. 4, pp. 592-600. Electronic Publication Date: 14 Mar 2019 Journal code: 101485040. E-ISSN: 1944-0057. L-ISSN: 1944-0057.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813450-01-1	Glyphosate residue concentrations in honey attributed through geospatial analysis to proximity of large-scale agriculture and transfer off-site by bees.	Berg Carl J King H Peter Delenstarr Glenda Kumar Ritikaa Rubio Fernando; Glaze Tom	PloS one, (2018) Vol. 13, No. 7, pp. e0198876. Electronic Publication Date: 11 Jul 2018 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC6040695.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-629607-01-1	Are pesticide residues in honey related to oilseed rape treatments?.	Karise Reet Raimets Risto; Williams Ingrid H; Mand Marika Bartkevics Vadims; Pugajeva Iveta Pihlik Priit; Viinalass Haldja Keres Indrek	Chemosphere, (2017 Dec) Vol. 188, pp. 389-396. Electronic Publication Date: 4 Sep 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812215-01-1	Survey of Glyphosate Residues in Honey, Corn and Soy Products	Rubio Fernando, Guo Emily and Kamp Lisa	Journal of Environmental and Analytical Toxicology (2014) 5: 249.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812379-01-1	The use of a lacertid lizard as a model for reptile ecotoxicology studies - Part 1 Field demographics and morphology	Amaral, Maria Jose; Carretero, Miguel A.; Bicho, Rita C.; Soares, Amadeu M. V. M.; Mann, Reinier M.	Chemosphere, (2012) Vol. 87, No. 7, pp. 757-764. CODEN: CSMHAF. ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	This study reports results from a long term population monitoring study. The endpoints are such that it difficult to relate to an ecotox risk assessment for Annex I renewal purposes, but is supportive from a population level perspective.			
M-813275-01-1	Comparative Early Life Stage Toxicity of the African Clawed Frog, <i>Xenopus laevis</i> Following Exposure to Selected Herbicide Formulations Applied to Eradicate Alien Plants in South Africa.	Babalola, Oluwaseun O. (correspondence); Van Wyk, J.H. Babalola, Oluwaseun O. (correspondence)	Archives of Environmental Contamination and Toxicology, (1 Jul 2018) Vol. 75, No. 1, pp. 8-16. Refs: 50 ISSN: 0090-4341; E-ISSN: 1432-0703 CODEN: AECTCV	Category B, Relevant but supplementary articles after detailed assessment	As the composition of the Roundup used in the test cannot be confirmed, the study must be considered as being supplementary. Original roundup contains a POEA surfactant which drives the toxicity of the product.			Y
M-813267-01-1	Effect on the growth and development and induction of abnormalities by a glyphosate commercial formulation and its active ingredient during two developmental stages of the South-American Creole frog, <i>Leptodactylus latrans</i> .	Bach Nadia Carla; Natale Guillermo Sebastian; Ronco Alicia Estela Somoza Gustavo Manuel	Environmental science and pollution research international, (2016 Dec) Vol. 23, No. 23, pp. 23959-23971. Electronic Publication Date: 15 Sep 2016 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	Endpoint data presented for a formulated product other than the representative formulation for the Annex I. There are data indicated for gly technical material, but this material is not identified in the materials and methods.			Y
M-812424-01-1	Proximity to agriculture is correlated with pesticide tolerance: evidence for the evolution of amphibian resistance to modern pesticides.	Cothran, Rickey D. [Reprint Author]; Brown, Jenise M.; Relyea, Rick A.	Evolutionary Applications, (JUL 2013) Vol. 6, No. 5, pp. 832-841. http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1752-4571 . ISSN: 1752-4571. E-ISSN: 1752-4571.	Category B, Relevant but supplementary articles after detailed assessment	Endpoints or findings are not relevant at EU level ecotox risk assessment, but may be evidencial / relevant to biodiversity discussions.			
M-812427-01-1	Role of sediments in modifying the toxicity of two Roundup formulations to six species of larval anurans.	Fuentes Latic Moore Lindsay J; Rodgers John H Jr; Bowerman William W; Yarrow Gregory K; Chao Wayne Y	Environmental toxicology and chemistry, (2014 Nov) Vol. 33, No. 11, pp. 2616-20. Electronic Publication Date: 22 Sep 2014 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Category B, Relevant but supplementary articles after detailed assessment	No specific endpoints presented that could be used in an EU level Annex I Ecotox risk assessment.			Y
M-812393-01-1	Comparative toxicity of methidathion and glyphosate on early life stages of three amphibian species: <i>Pelophylax ridibundus</i> , <i>Pseudepidalea viridis</i> , and <i>Xenopus laevis</i> .	Gungordu Abbas	Aquatic toxicology (Amsterdam, Netherlands), (2013 Sep 15) Vol. 140-141, pp. 220-8. Electronic Publication Date: 18 Jun 2013 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Category B, Relevant but supplementary articles after detailed assessment	Endpoints for amphibians are not a data requirement for Annex I renewal in the EU, as there are no recognised guidelines			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812448-01-1	Integrated assessment of biochemical markers in premetamorphic tadpoles of three amphibian species exposed to glyphosate- and methidathion-based pesticides in single and combination forms.	Gungordu Abbas Uckun Mirac Yologlu Ertan	Chemosphere, (2016 Feb) Vol. 144, pp. 2024-35. Electronic Publication Date: 18 Nov 2015 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	Amphibian enzyme level based endpoints are not a data requirement for the EU level ecotox risk assessment for Annex I purposes. Endpoints cannot be related to the EU level Ecotox risk assessment.			Y
M-813121-01-1	Low concentrations of atrazine, glyphosate, 2,4-dichlorophenoxyacetic acid, and triadimefon exposures have diverse effects on <i>Xenopus laevis</i> organ morphogenesis.	Lenkowski Jenny R Sanchez-Bravo Gabriela; McLaughlin Kelly A	Journal of environmental sciences (China), (2010) Vol. 22, No. 9, pp. 1305-8. Journal code: 100967627. ISSN: 1001-0742. L-ISSN: 1001-0742.	Category B, Relevant but supplementary articles after detailed assessment	Toxicity of GLY and other chemistry to amphibians to look at malformations, up to 5 mg/L. Static renewal at 24 hr in 48 hr study. Conducted in the US. No relevant endpoint generated for the GLY RA renewal.			Y
M-479129-01-1	Effects of Technical-Grade Active Ingredient vs. Commercial Formulation of Seven Pesticides in the Presence or Absence of UV Radiation on Survival of Green Frog Tadpoles	Puglis, Holly J.; Boone, Michelle D.	Archives of Environmental Contamination and Toxicology, (2011) Vol. 60, No. 1, pp. 145-155. CODEN: AECTCV. ISSN: 0090-4341.	Category B, Relevant but supplementary articles after detailed assessment	Conducted in the US, compares GLY a.i. and GLY product (and others). Study looks at toxicity to green frog tadpoles (collected from local pond and kept in aged tap water) and impact of UV radiation to see if it enhances toxicity. Application up to 5 mg/L. Findings difficult to extrapolate to Regulatory RA of Gly.			
M-813149-01-1	Effect of glyphosate-based herbicide on acetylcholinesterase activity in tadpoles, <i>Hoplobatrachus rugulosus</i> .	Ruamthum W Visetson S; Milne J R; Bullangpoti V	Communications in agricultural and applied biological sciences, (2011) Vol. 76, No. 4, pp. 923-30. Journal code: 101200320. ISSN: 1379-1176. L-ISSN: 1379-1176.	Category B, Relevant but supplementary articles after detailed assessment	Conducted in Thailand. Study to look at effect of GLY on enzyme activity in tadpoles (east asian bullfrog). 96 hr exposure. LC50 values generated.			Y
M-812438-01-1	The toxicity of glyphosate alone and glyphosate-surfactant mixtures to western toad (<i>Anaxyrus boreas</i>) tadpoles.	Vincent Kim Davidson Carlos	Environmental toxicology and chemistry, (2015 Dec) Vol. 34, No. 12, pp. 2791-5. Electronic Publication Date: 29 Oct 2015 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Category B, Relevant but supplementary articles after detailed assessment	Approaches used are not recognised approaches, but do inform on the toxicity of gly IPA salt to amphibians in the Gly only investigations.			Y
M-813254-01-1	Acute toxicity and risk to lizards of rodenticides and herbicides commonly used in New Zealand.	Weir, Scott M. [Reprint Author]; Yu, Shuangying; Knox, Ami; Talent, Larry G.; Monks, Joanne M.; Salice, Christopher J.	New Zealand Journal of Ecology, (2016) Vol. 40, No. 3, pp. 342-350. http://www.nzes.org.nz/nzje/ . CODEN: NZJED6. ISSN: 0110-6465. E-ISSN: 1177-7788.	Category B, Relevant but supplementary articles after detailed assessment	Species relevance is difficult to relate to an EU level ecotox risk assessment for Annex I.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813117-01-1	Larval responses of three midwestern anurans to chronic, low-dose exposures of four herbicides.	Williams Bethany K Semlitsch Raymond D	Archives of environmental contamination and toxicology, (2010 Apr) Vol. 58, No. 3, pp. 819-27. Electronic Publication Date: 19 Sep 2009 Journal code: 0357245, E-ISSN: 1432-0703. L-ISSN: 0090-4341.	Category B, Relevant but supplementary articles after detailed assessment	Eggs collected from wetlands.			Y
M-812310-01-1	Toxicity assessment at different experimental scenarios with glyphosate, chlorpyrifos and antibiotics in Rhinella arenarum (Anura: Bufonidae) tadpoles.	Cuzzoli Boccioni Ana P; Lajmanovich Rafael C; Peltzer Paola M; Attademo Andres M; Martinuzzi Candela S	Chemosphere, (2020 Oct 02) pp. 128475. Electronic Publication Date: 2 Oct 2020 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	No endpoints are provided, the study does not alter the existing risk assessment but the findings of the work could serve to discuss the sublethal effects (biological, morphological and enzymatic parameters) of two different glyphosate concentrations (1.25 and 2.5 mg/L) to tadpoles of an amphibian species as part of a broader weight of evidence. An endpoint cannot be derived. No analytical verifications of the test item concentrations are provided. Surface egg strings of R. arenarum used for the experiments were collected from temporary small ponds situated in the natural floodplain of the Parana River, considered as an unpolluted site (no analytical verification was however made). Only two concentrations were tested.			
M-813603-01-1	Evaluation of the genotoxic, mutagenic, and histopathological hepatic effects of polyoxyethylene amine (POEA) and glyphosate on Dendropsophus minutus tadpoles.	Lopes Alice; Benvindo-Souza Marcelino; Carvalho Wanessa Fernandes; Nunes Hugo Freire; de Melo E Silva Daniela de Lima Phamella Neres; Costa Matheus Santos; Benetti Edson Jose; Simoes Karina Guerra Vinicius Saboia-Morais Simone Maria Teixeira Santos Carolina Emilia; Bastos Rogerio Pereira	Environmental pollution (Barking, Essex : 1987), (2021 Aug 04) Vol. 289, pp. 117911. Electronic Publication Date: 4 Aug 2021 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for amphibians (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on vertebrate wildlife. A quantitative endpoint can be established but based on effects at cellular/mololecular level (genotoxicity and mutagenicity). For the histopathological effects that are relevant for the risk assessment, only a qualitative evaluation was conducted.			
M-803358-01-1	A cocktail of contaminants: how mixtures of pesticides at low concentrations affect aquatic communities .	Relyea Rick A	Oecologia, (2009 Mar) Vol. 159, No. 2, pp. 363-76. Electronic Publication Date: 11 Nov 2008	Category B, Relevant but supplementary articles after detailed assessment	Provides information on the effects of glyphosate on phytoplankton, zooplankton and periphyton and larval development of amphibians but no risk assessment relevant endpoints are presented.			Y
M-803568-01-1	Effects of paraquat and glyphosate on steroidogenesis in gonads of the frog Rana esculenta in vitro	Quassinti, Luana; Maccari, Ennio; Murri, Oretta; Bramucci, Massimo	Pesticide biochemistry and physiology (2009) , Volume 93, Number 2, pp. 91-95 ISSN: 0048-3575 Source Note: 2009 Feb., v. 93, no. 2	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812171-01-1	Reply to the letter to the editor regarding our article (paganelli et Al., 2010).	Carrasco Andres E	Chemical research in toxicology, (2011 May 16) Vol. 24, No. 5, pp. 610-3. Electronic Publication Date: 23 Mar 2011 Journal code: 8807448. E-ISSN: 1520-5010. L-ISSN: 0893-228X.	Category B, Relevant but supplementary articles after detailed assessment	letter to editor			
M-812360-01-1	Glyphosate-based herbicides produce teratogenic effects on vertebrates by impairing retinoic acid signaling.	Paganelli Alejandra Gnazzo Victoria; Acosta Helena; Lopez Silvia L; Carrasco Andres E	Chemical research in toxicology, (2010 Oct 18) Vol. 23, No. 10, pp. 1586-95. Electronic Publication Date: 9 Aug 2010 Journal code: 8807448. E-ISSN: 1520-5010. L-ISSN: 0893-228X.	Category B, Relevant but supplementary articles after detailed assessment	Study to look at the effect of GLY product on the developmental effects of xenopus laevis embryos. GLY injected into embryos. No relevant endpoint generated for the Regulatory RA of GLY renewal. High concentrations, unrealistic route of exposure. Conducted in Argentina.	Y	Y	
M-813140-01-1	Toxicological responses of Cyprinus carpio exposed to a commercial formulation containing glyphosate.	Cattaneo Roberta Clasen Barbara; Loro Vania Lucia; de Menezes Charlene Cavalheiro; Pretto Alexandra; Baldissierotto Bernardo; Santi Adriana; de Avila Luis Antonio	Bulletin of environmental contamination and toxicology, (2011 Dec) Vol. 87, No. 6, pp. 597-602. Electronic Publication Date: 20 Sep 2011 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Category B, Relevant but supplementary articles after detailed assessment	Roundup (480 g/L contains surfactant) used up to 10 mg/L with common carp to look at impact on AChE enzyme and physiological effects. Study described well but not conducted to a guideline and the endpoints can not be extrapolated for use in the renewal of GLY. Conducted outside EU.	Y		Y
M-813180-01-1	Toxicity determination of three sturgeon species exposed to glyphosate.	Filizadeh, Y.; Islami, H. R.	Iranian Journal of Fisheries Sciences (2011), Volume 10, Number 3, pp. 383-392, 48 refs. ISSN: 1562-2916 Published by: Iranian Fisheries Research Organization, Tehran URL (Availability): http://www.jifro.ir/browse.php?a_id=211&sid=1&slc_1_ang=en	Category B, Relevant but supplementary articles after detailed assessment	LC50 generated for sturgeon species. GLY products used. Guideline not mentioned but suitable methods described. Conducted in Iran.			Y
M-812346-01-1	Evaluation of side-effects of glyphosate mediated control of giant reed (Arundo donax) on the structure and function of a nearby Mediterranean river ecosystem.	Puertolas Laura Damasio Joana; Barata Carlos; Soares Amadeu M V M; Prat Narcis	Environmental research, (2010 Aug) Vol. 110, No. 6, pp. 556-64. Electronic Publication Date: 11 Jun 2010 Journal code: 0147621. E-ISSN: 1096-0953. L-ISSN: 0013-9351.	Category B, Relevant but supplementary articles after detailed assessment	The effect of the herbicide Herbolex (mixture of glyphosate isopropyl amine salts and surfactant compounds) on the structure and function of a nearby river ecosystem after application of glyphosate in the riparian vegetation was evaluated. Therefore, in situ bioassays with transplanted Daphnia magna, field collected caddisfly (Hydropsyche exocellata) and benthic macroinvertebrate structure and function were investigated. The structure of the benthic macroinvertebrate assemblages was assessed at the same time as well as two additional time-points before application (5 and two month before). Transplants with Daphnia magna were deployed at the day of application and 12 days afterwards, whereas Hydropsyche exocellata samples were collected at the day of application and 3 days afterwards. Concentration of glyphosate and the metabolite AMPA was analysed in the river water samples collected from the studied sites at the day of application and two, three and 12 days afterwards. But other chemicals were not analysed. The herbicide was applied at 2.1 kg glyphosate/ha in an area of 0.5 ha of riparian forest, but the exact place is not specified. Furthermore, no data on the weather conditions were collected which may have had an influence on the community structure. No exact biological data regarding the macroinvertebrate abundance is reported. However, as no results were reported in values reflecting agreed endpoints for the ecological risk assessment and the information is insufficient to transfer values in such endpoints, the study can be considered as supportive information only.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813128-01-1	Ecotoxicity of glyphosate and aterbane (R) br surfactant on guaru (<i>Phalloceros caudimaculatus</i>).	Shiogiri, Natalia Sayuri [Reprint Author]; Carraschi, Silvia Patricia; Cubo, Patricia; Schiavetti, Barbara Lopes; da Cruz, Claudinei; Pitelli, Robinson Antonio	Acta Scientiarum Biological Sciences, (JUL-SEP 2010) Vol. 32, No. 3, pp. 285-289. ISSN: 1679-9283. E-ISSN: 1807-863X.	Category B, Relevant but supplementary articles after detailed assessment	Conducted in Brazil, looking at comparison of toxicity of GLY products with different amounts of surfactant to different fish species and impact on electrical conductivity, dissolved oxygen and pH.			Y
M-803660-01-1	Histopathological effects of glyphosate on juvenile African catfish (<i>Clarias gariepinus</i>).	Ayoola, S. O.	American-Eurasian Journal of Agricultural and Environmental Science (2008) , Volume 4, Number 3, pp. 362-367, 27 refs. ISSN: 1818-6769 Published by: IDOSI Publications, Faisalabad URL (Availability): http://www.idosi.org/aejaes/jaes4(3)/14.pdf	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			Y
M-806887-01-1	Ecotoxicological studies on the pejerrey (<i>Odontesthes bonariensis</i> , Pisces Atherinopsidae).	Carriquiriborde, Pedro; Ronco, Alicia	Biocell, (2006) Vol. 30, No. 1, pp. 97-109. https://www.techscience.com/biocell/index.html . ISSN: 0327-9545. E-ISSN: 1667-5746.	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			
M-813441-01-1	Effect of acute toxicity of glyphosate in gold fish <i>Carassius auratus</i> .	Al-Kawaz, Jenan M. (correspondence)	Annals of Tropical Medicine and Public Health, (2019) Vol. 22, No. Special Issue 5. arn. SP173. Refs: 24 ISSN: 1755-6783; E-ISSN: 0974-6005	Category B, Relevant but supplementary articles after detailed assessment	This is a dose-response lab study on the 96-h acute toxicity to goldfish (<i>Carassius auratus</i>) with an endpoint of 96-h LC50 = 14.55 ppm. 4 concentrations were tested. No control results were reported. Behavioural, morphological and histopathological changes were recorded. No analytical verifications, no control results and no information on origin/ any previous exposure of fishes is available. Lack of analytical verifications, Glyphosate not sufficiently documented, No information given about the control, Fish used in test were collected from fish shops and they are not correctly reported. Previous exposure to pesticides cannot be excluded. No statistical information provided.			
M-813354-01-1	Acute toxicity of glyphosate-based Isopropylamine formulation to juvenile African catfish (<i>Clarias gariepinus</i>).	Erhunmwunse, N. O.; Ogbuide, O. S.; Tongo, I. I.; Enuneku, A. A.; Adebayo, P. O.	Nigerian Journal of Basic and Applied Sciences (2018), Volume 26, Number 2, pp. 97-101, many ref. ISSN: 0794-5698 Published by: Usmanu Danfodiyo University, Sokoto URL (Availability): https://www.ajol.info/index.php/njbas/article/view/184802/174147	Category B, Relevant but supplementary articles after detailed assessment	This is a dose-response lab study on the 96-h acute toxicity to African catfish (<i>Clarias gariepinus</i>) juveniles with an endpoint of 96-h LC50 = 300 mg/L. Lack of analytical verifications of the substance concentration in water. No clear origin of the fishes. Unit of the endpoint unclear. No information whether the endpoint refers to the formulation, glyphosate or its salt. Test item cannot be identified from the article. Test design stated as being based on total residual chlorine in abstract - but it does state in the methods that OECD (1992) procedure was used, which refers to the OECD 203 acute test guideline from July 1992. Concerning fish loading - if the test employed 60 L aquariums - which cannot be confirmed, the loading is too high (approx. 18 g fish/L) compared to OECD 1992 procedure for acute fish testing of approx 1 g fish/L.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813369-01-1	Effect of glyphosate roundup on oxygen consumption in freshwater fish <i>Rasbora daniconius</i>	Kharat, T. L.; Rokade, K. B.; Humbe, A. D.; Shejule, K. B.	Ecoscand, (2016) Vol. 9, No. Spec.Iss., pp. 567-571. CODEN: ECOSCG. ISSN: 0974-0376.	Category B, Relevant but supplementary articles after detailed assessment	This is a dose-response lab study on the 96-h acute toxicity to a local fish species (<i>Rasbora daniconius</i>) with an endpoint of 96-h LC50 = 5.66 mg/L. 7 concentrations were tested. No control. Oxygen consumption was measured in a separate test when fishes are exposed to control, lethal and sub-lethal concentration of the formulation in water. Behavioural and morphological observations were also made. The article is published in a non SCI (nor peer reviewed) journal. Lack of analytical verifications, No statistical analysis, Glyphosate not sufficiently documented, No information given about the control, Other relevant methodological information not provided, wild-caught fish used in test, previous exposure to pesticides cannot be excluded. No test guideline stated. Fitness of test population unknown. Exposure test conditions, test media preparation, environmental controls - all were not defined / no water quality data reported in the results. Fish weights reported, but as test design not presented, the fish loading and influence on outcome of results cannot be determined. Uncertainty in the results based on errors in the results table i.e. 70% mortality stated to have occurred at the 4.6 mg/L rate, when the text and the report table suggest only 30% mortality.			
M-813443-01-1	Lethal toxicity of glyphosate herbicide on koi carp, <i>Cyprinus carpio</i> (Linnaeus, 1758) fingerlings.	Sanudi, F. (correspondence); Indulkar, S.T.; Adsul, A.D.; Pawase, A.S.; Sawant, M.S.	Toxicology International, (2018) Vol. 25, No. 2, pp. 139-141. Refs: 7 ISSN: 0971-6580; E-ISSN: 0976-5131	Category B, Relevant but supplementary articles after detailed assessment	Bioassay experiments were conducted to determine the lethal toxicity of glyphosate herbicide on Koi carp, <i>Cyprinus carpio</i> fingerlings. The fishes were exposed to different concentrations of glyphosate and mortality was recorded after every 6 h for a period of 96 h. The 96 h LC50 concentration for glyphosate on Koi carp fingerlings was found to be 33.2 mg/L. There is no test item information, nor biological observation data presented to corroborate the findings, in addition no chemical analysis and therefore exposure cannot be confirmed.			
M-813357-01-1	Acute toxicity of glyphosate herbicide on Nile tilapia (<i>Oreochromis niloticus</i>)	Selvarani, A. Juliet; Padmavathy, P.; Srinivasan, A.; Sugumar, G.; Jawahar, P.; Manimekalai, D.	International Journal of Current Microbiology and Applied Sciences, (2019) Vol. 8, No. 10, pp. 61-68. CODEN: IJCMO9. ISSN: 2319-7706.	Category B, Relevant but supplementary articles after detailed assessment	This test was performed in a static renewal regime with Nile tilapia (<i>Oreochromis niloticus</i>) exposed to 5 different concentrations of glyphosate (15.33, 30.67, 61.34, 122.68 and 245.36 mg/L) for 96 hours. Mortality was recorded but also the gill, liver and kidney tissues were dissected out. Lack of analytical verifications of the substance concentration in water but exposure medium was changed every 24 h to maintain the desired concentrations. The test item is not identified. There is no chemical analysis. Water quality measurements have / appear to have only been done at the test start. A table is presented, but whether this is starting or duration derived values is unknown. Fish loading during the 96 hr test is excessive. 10 x 100 g fish in 50 litres = 20 g fish / litre. US EPA requires 0.8 g fish/L; OECD requires 1.0 g/L. This study would be considered invalid in the EU and the US for these reasons.			
M-813349-01-1	Comparative toxicities of five herbicides on nauplii of <i>Artemia franciscana</i> as an ecotoxicity bioindicator.	Alishahi, M. [Reprint Author]; Dezfily, Tulaby Z.	IRANIAN JOURNAL OF FISHERIES SCIENCES, (2019) Vol. 18, No. 4, pp. 716-726. http://www.jifro.ir . ISSN: 1562-2916. E-ISSN: 1562-2916.	Category B, Relevant but supplementary articles after detailed assessment	The material and methods section lack some important information. OECD standard methods were mentioned in the publication however, the test guideline or specific validity criteria were not specified. Furthermore, information on preparation, application of the test item or exposure conditions are missing. No results for the control group are available to put the biological effects in context. Also no mortality results for all treatment group are given. At the end of the test, an endpoint was derived, but further statistical information (assessment of statistical power, confidence intervals) are not stated. Furthermore, there was no analytical verification of test concentrations reported. The study is considered unreliable.			
M-813280-01-1	Acute toxicity evaluation of five herbicides: paraquat, 2,4-dichlorophenoxy acetic acid (2,4-D), trifluralin, glyphosate and atrazine in <i>Luciobarbus esocinus</i> fingerlings.	Alishahi, M.; Dezfily, Z. T.; Mohammadian, T.	Iranian Journal of Veterinary Medicine (2016), Volume 10, Number 4, pp. En319-En330, Pe39, 36 refs. ISSN: 2251-8894 Published by: Faculty of Veterinary Medicine, University of Tehran, Tehran URL (Availability): https://ijvm.ut.ac.ir/article_59726.html	Category B, Relevant but supplementary articles after detailed assessment	This article only provides supplementary information for the regulatory risk assessment of Glyphosate. The aim of this work was to evaluate the potential acute toxicological effects of glyphosate and other herbicides on native fish in Iran as well as to determine relative potency of frequently used herbicides. Although the study was stated to have been conducted according to a recognised test guideline (OECD 203), no validity criteria was presented. The selected fish species and their approximate origin are described but environmental holding conditions (water quality) for the fish handling prior to and during the study were not included. There was limited test substance information presented, with no rationale presented for the selection of exposure concentrations. Glyphosate concentrations were also not measured/confirmed during the evaluation period. Behavioural observations relating to the lethargy and swimming behaviour are not considered directly relatable to the nominal exposure concentration. The study is considered unreliable.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813255-01-1	Acute toxicity of glyphosate and paraquat to the African catfish (<i>Clarias gariepinus</i> , Teugels 1986) using some biochemical indicators	Ayanda, O I; Oniye, S J; Auta, J; Ajibola, V O	Tropical zoology (2015), Volume 28, Number 4, pp. 152-162 ISSN: 1970-9528 Published by: Taylor & Francis Source Note: 2015 Oct. 2, v. 28, no. 4	Category B, Relevant but supplementary articles after detailed assessment	The test items was not identified, therefore it is not clear what was actually tested and to which compound the effects / results can be assigned.			Y
M-813313-01-1	Sensitivity, ecotoxicity and histopathological effects on neotropical fish exposed to glyphosate alone and associated to surfactant	da Cruz, Claudinei; Carraschi, Silvia Patricia; Shigiri, Natalia Sayuri; daSilva, Adilson Ferreira; Pitelli, Robinson Antonio; Machado, Marcia Rita Fernandes	Journal of Environmental Chemistry and Ecotoxicology, (2016) Vol. 8, No. 3, pp. 25-33. CODEN: JECECH. ISSN: 2141-226X.	Category B, Relevant but supplementary articles after detailed assessment	The study was not conducted to GLP and/or according to a recognized test guideline and there are no validity criteria presented. The authors state that glyphosate alone and in association with Aterbane® BR was classified as practically non-toxic, whereas Aterbane® BR alone was considered moderately toxic for the tested organisms. However, due to insufficient explanation of experimental set-up (e.g. test substance, test medium, statistical analysis) and lack of experimental standard procedures (e.g. analytical verification), the study is may be used only as supportive information.			
M-813300-01-1	A full life-cycle bioassay with <i>Cantareus aspersus</i> shows reproductive effects of a glyphosate-based herbicide suggesting potential endocrine disruption.	Druart Coline Gimbert Frederic; Scheiffler Renaud; de Vaufléury Annette	Environmental pollution (Barking, Essex : 1987), (2017 Jul) Vol. 226, pp. 240-249. Electronic Publication Date: 7 Apr 2017 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The test design is novel and the achieved endpoints cannot be related to an EU level ecotox risk assessment for aAnnex I renewal.			Y
M-812264-01-1	Glyphosate induces toxicity and modulates calcium and NO signaling in zebrafish embryos.	Gaur Himanshu Bhargava Anamika	Biochemical and biophysical research communications, (2019 Jun 11) Vol. 513, No. 4, pp. 1070-1075. Electronic Publication Date: 19 Apr 2019 Journal code: 0372516. E-ISSN: 1090-2104. L-ISSN: 0006-291X.	Category B, Relevant but supplementary articles after detailed assessment	Considered supplementary as the approaches used are not used in Ecotox risk assessment for Annex I renewal.			
M-813312-01-1	Behavioural and some physiological assessment of glyphosate and paraquat toxicity to juveniles of African catfish, <i>Clarias gariepinus</i> .	Isaac, A. O.; Joshua, O. S.; Jehu, A.	Pakistan Journal of Zoology (2017), Volume 49, Number 1, pp. 183-190, 36 refs. ISSN: 0030-9923 Published by: Zoological Society of Pakistan, Lahore URL (Availability): http://researcherslinks.com/current-issues/Behavioural-Physiological-Assessment-Glypho	Category B, Relevant but supplementary articles after detailed assessment	Although the study itself is not directly relatable to an EU level ecotoxicological risk assessment for Annex I renewal purposes, the study was potentially considered as sublethal effects on fish behaviour following exposure to glyphosate were described.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813212-01-1	Fish Toxicity of Commercial Herbicides Formulated With Glyphosate	Jofre, Diego Martin; Garcia, Maria Jose Germano; Salcedo, Rodrigo; Morales, Mirta; Alvarez, Maria; Enriz, Daniel; Giannini, Fernando	Journal of Environmental & Analytical Toxicology. Vol. 4, no. 1, 1 p. 2013., 17 refs. E-ISSN: 2161-0525 Published by: OMICS Publishing Group	Category B, Relevant but supplementary articles after detailed assessment	Data considered supplemental as the test design and the achieved endpoints are not those used in EU risk assessment. The test substance although not specifically identified, inn tremes of the SL salt of glyphosate, looks like it could be at a similar similar a.c. content.			
M-813172-01-1	Effects of chronic exposures to the herbicides atrazine and glyphosate to larvae of the threespine stickleback (<i>Gasterosteus aculeatus</i>).	Le Mer Charline Roy Robert L; Pellerin Jocelyne; Couillard Catherine M; Maltais Domynick	Ecotoxicology and environmental safety. (2013 Mar) Vol. 89, pp. 174-181. Electronic Publication Date: 27 Dec 2012 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Category B, Relevant but supplementary articles after detailed assessment	The Glyphosate analytical concentrations were highly variable, but overall based on the 2008 dataset, the mean measured values were within 25% of the nominal exposure concentrations. The sticklebacks were obtained from the natural environment and therefore prior exposure to chemicals cannot be discounted, although the selected fish from the same location in two different years and achieved similar assay results in both years. The test system was considered robust based on the performance of the two positive control groups. Concerning the test design, the study was conducted according to methods described in Hahlbeck (2004) 'The juvenile threespined stickleback (<i>Gasterosteus aculeatus</i> L.) as a model organism for endocrine disruption: I. Sexual differentiation' whilst all available information is presented in this paper, the environmental conditions employed during the chronic exposure part of the test are not confirmed and validity criteria are not clearly stated. The achieved measured concentrations were also lower than is required for this study type and analysis in one of the two studies described was not complete. Whether the study was conducted according to GLP cannot be confirmed from the paper. Given some of the uncertainty over elements of the test design, the study should be considered unreliable.			Y
M-813194-01-1	Acute toxicity of a commercial glyphosate formulation on European sea bass juveniles (<i>Dicentrarchus labrax</i> L.): gene expressions of heme oxygenase-1 (ho-1), acetylcholinesterase (AChE) and aromatases (cyp19a and cyp19b).	Prevot-D'Alvise N Richard S; Coupe S; Bunet R; Grillasca J P	Cellular and molecular biology (Noisy-le-Grand, France), (2013 Dec 31) Vol. 59 Suppl, pp. OL1906-17. Electronic Publication Date: 31 Dec 2013 Journal code: 9216789. E-ISSN: 1165-158X. L-ISSN: 0145-5680.	Category B, Relevant but supplementary articles after detailed assessment	Test item was appropriately identified as being linked to the representative formulation. Test design does not however follow a recognised approach, Uneven sample sizes and large fish were exposed. The rationale behind test concentration selection was not clear and dose prep was unclear as exposure rates could not be confirmed. Effects of acetone on fish were not discussed. Endpoints anyway demonstarte low toxicity compared to existing list of endpoints.			Y
M-813345-01-1	Acute toxicity of herbicides on the survival of adult shrimp, <i>Artemia Franciscana</i>	Rahnama, Roya; Dezfuly, Zahra Tulaby; Alishahi, Mojtaba	Iranian Journal of Toxicology, (2018) Vol. 12, No. 6, pp. 45-51. CODEN: IJTRCT. ISSN: 2251-9459.	Category B, Relevant but supplementary articles after detailed assessment	Important information is missing in the material and methods section. The preparation and application of the test solutions was not reported. The test item is not adequately specified. The given purity of 41 % indicates that a product was tested. However, it is not given whether the test concentrations refer to the product or to the active substance. In addition, the biological results of the test were not sufficiently stated. The endpoint data presented in the paper is difficult to understand. Table 3 in the article indicates a 48 hour LC50 of 17.483 mg/LK, whilst in Figure 2, the 48n hour LC50 is 38.897 mg/L. Therefore, the reliability of the data presented in the article is questionable. In addition, it is unclear whether the animals were fed during the assay. Figure 3 appears to show artemia with egg bags and highlights the contents of the rudimentary artemia gut as being herbicides to which the artemia were exposed. This observation is not supported by any information presented in the paper. No mortality data for the test concentrations nor for the controls is presented to evaluate the results. Assessment of the statistical power of the assay is not possible. Furthermore, there was no analytical verification of test concentrations reported, there is no guideline stated and it is non GLP. Multiple doses were tested, but a positive control group was not included, so the performance / robustness of the test system cannot be confirmed.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-642959-01-1	Investigation of LC50, NOEC and LOEC of glyphosate, deltamethrin and pretilachlor in guppies (Poecilia reticulata)	Sadeghi, Ali; Hedayati, Aliakbar	Iranian Journal of Toxicology, (2014) Vol. 8, No. 26, pp. 1124-1129. CODEN: IJTRCT. ISSN: 2251-9459.	Category B, Relevant but supplementary articles after detailed assessment	Study was considered to be conducted according to a recognised guideline via the cited reference in the paper, but the test system specifics cannot be confirmed. For example, there are validity criteria stated but water qualities / environmental conditions are not presented, so the suitability of the test system cannot be confirmed. Additionally, there was no analytical verification of the exposure concentrations, so exposure cannot be confirmed. The source and age / size of the fish are not presented in the paper, so the appropriateness of the test system cannot be confirmed. Additionally, the size of the aquariums used is stated (120 L) but the volume of test or control medium in these vessels is not stated, therefore fish loading rates cannot be determined. The test substance is identified as a 'commercial 41% glyphosate' – no other information are presented so effects cannot clearly be related to the active substance glyphosate, and the relevance of the test item used to the EU renewal of MON 52276 cannot be confirmed. The study is considered unreliable.			
M-812200-01-1	Treating Prey With Glyphosate Does Not Alter the Demographic Parameters and Predation of the Harmonia axyridis (Coleoptera: Coccinellidae).	Saska Pavel; Skuhrovec Jiri; Lukas Jan; Vlach Miroslav; Honek Alois; Chi Hsin; Tuan Shu-Jen	Journal of economic entomology, (20170401) Vol. 110, No. 2, pp. 392-399. Journal code: 2985127R. E-ISSN: 1938-291X. L-ISSN: 0022-0493.	Category B, Relevant but supplementary articles after detailed assessment	Exposure was performed via treated prey, which does not correspond to an adequate route of exposure regarding current test guideline for non-target-arthropods. 2 mL test solution was applied on 50 aphids placed on a filter paper in a petri dish, which dimension are not known. There is no analytical verification, and the study is non guideline and non GLP. The study is well documented, but no endpoints could be derived which can be applied for the risk assessment. Therefore, the study is considered as supplementary only.			Y
M-813147-01-1	Toxicity evaluation of glyphosate agrochemical components using Japanese medaka (Oryzias latipes) and DNA microarray gene expression analysis	Uchida Masaya Takumi Shota; Tachikawa Keiko; Yamauchi Ryoko; Goto Yoshiyuki; Matsusaki Hiromi; Nakamura Hiroshi; Kagami Yoshihiro; Kusano Teruhiko; Arizono Koji	The Journal of toxicological sciences, (2012) Vol. 37, No. 2, pp. 245-54. Journal code: 7805798. E-ISSN: 1880-3989. L-ISSN: 0388-1350.	Category B, Relevant but supplementary articles after detailed assessment	The material and methods part lack some important information. Only glyphosate was sufficiently documented, but the formulation Roundup® is not specified. In addition, it is unclear whether the test concentrations for the formulation refer to the active ingredient or to the product. The test design is not adequately described. Only a concentration range was given and tested dose rates remain unclear. The performance of a control group as well as the description of observations is not reported. No mortality data neither for the test concentrations nor for the controls was given to evaluate the results. Furthermore, there was no analytical verification of test concentrations reported. No suitable exposure throughout the test was demonstrated and thus the reliability of the study is questionable. The test guideline followed was not stated nor was the study conducted to GLP. The study should be considered as supplementary only.			Y
M-813263-01-1	Roundup® in Zebrafish: Effects on Oxidative Status and Gene Expression.	Velasques Robson Rabelo; Sandrini Juliana Zomer; da Rosa Carlos Eduardo	Zebrafish, (20161000) Vol. 13, No. 5, pp. 432-41. Electronic Publication Date: 17 Jun 2016 Journal code: 101225070. E-ISSN: 1557-8542. L-ISSN: 1545-8547.	Category B, Relevant but supplementary articles after detailed assessment	The data presented demonstrates that in the presence of a toxicant, there are changes in the oxidative status of zebrafish gills and liver tissue. However, these data cannot be related to an ANNEX I risk assessment for renewal.			Y
M-813200-01-1	Effect of glyphosate-based herbicide on early life stages of Java medaka (Oryzias javanicus): a potential tropical test fish.	Yusof Shahrizad; Ismail Ahmad Alias Mohamad Shafiq	Marine pollution bulletin, (2014 Aug 30) Vol. 85, No. 2, pp. 494-8. Electronic Publication Date: 14 Apr 2014 Journal code: 0260231. E-ISSN: 1879-3363. L-ISSN: 0025-326X.	Category B, Relevant but supplementary articles after detailed assessment	There is insufficient explanation provided on the analytical verification of the test concentrations, and the test concentrations were high ranging from 100 to 500 ppm. A regulatory endpoint is not available. There is no verification of dose levels, and the study is non guideline and not GLP. The article can be considered as supplementary information only.			
M-812206-01-1	Biological impacts of glyphosate on morphology, embryo biomechanics and larval behavior in zebrafish (Danio rerio).	Zhang Shuhui; Kuang Xiangyu; Li Xiang Xu Jia Li Shibao Chen Dongyan Zhao Xin Feng Xizeng	Chemosphere, (2017 Aug) Vol. 181, pp. 270-280. Electronic Publication Date: 21 Apr 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	Provides information on a test species that is relied upon in the risk assessment. But endpoints cannot be related to an EU level ecotox risk assessment.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813563-01-1	A bioassay on tissue cholinesterase activity of <i>Rutilus kutum</i> (Kamensky, 1901) exposed to some common pesticides in Iran.	Shiry Nima; Gholamhosseini Amin Alavinia Seyed Jalil Alavinia Seyed Jalil; Mirvaghefi Alireza	Veterinary research forum : an international quarterly journal, (2020 Fall) Vol. 11, No. 4, pp. 325-331. Electronic Publication Date: 15 Dec 2020 Journal code: 101625812. ISSN: 2008-8140. L-ISSN: 2008-8140. Report No.: PMC-PMC7904125.	Category B, Relevant but supplementary articles after detailed assessment	While the study reports on regulatory relevant endpoints for the acute toxicity to fish, the reporting is lacking essential information to ascertain the reliability of the derived endpoints. The identity of the test item (whether the active substance or a formulated product) was not clearly reported, purity of the test item was not provided. The application of the test item is not specified, it is unclear whether a solvent carrier was used. Exposure concentrations were not analytically verified. Composition of the test medium was not reported, neither were the environmental conditions during the test. Furthermore, there is barely any information on the control group, no results are reported for the control and it is unclear if the control group consisted of the same number of individuals as the treatment groups. While LC50 and LOEC values are reported, there is no information on the data distribution, goodness of fit or standard error. Raw data are not reported, hence it is impossible to assess the reliability of the reported endpoints.			
M-813154-01-1	The lethal impacts of Roundup® (glyphosate) on the fingerlings of guppy, <i>Poecilia reticulata</i> Peters, 1859.	Chandrasekera, W. U.; Weeraratna, N. P.	Asian Fisheries Science (2011), Volume 24, Number 4, pp. 367-378 ISSN: 0116-6514 Published by: Asian Fisheries Society, Quezon City URL (Availability): http://www.asianfisheriessociety.org/modules/libraries/singlefile.php?cid=219&lid=941	Category B, Relevant but supplementary articles after detailed assessment	The material and methods lacks important information. The purity of the formulation is not presented. There is a narrative on water qualities / environmental conditions during the test, but there is no actual data presented to confirm the acceptability of the exposure / test conditions except for a value presented for dissolved oxygen levels. There was no analytical verification of test concentrations reported and therefore the level of exposure cannot be confirmed. The study is considered to be unreliable.			Y
M-806103-01-1	Toxicity of glyphosate herbicide on Nile tilapia (<i>Oreochromis niloticus</i>) juvenile.	Ayoola, S. O.	African Journal of Agricultural Research (2008), Volume 3, Number 12, pp. 825-834, 30 refs. ISSN: 1991-637X Published by: Academic Journals, New York URL (Availability): http://www.academicjournals.org/ajar/PDF/pdf/percent202008/Dec/Ayoola.pdf	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			
M-813335-01-1	The effects of Roundup® in embryo development and energy metabolism of the zebrafish (<i>Danio rerio</i>)	Panetto, Ottassano S; Campos, Eldo; Costa, Evenilton P; do Carmo, Paulo R L; Feitosa, Natalia M; Fraga Gomes, Danielle S; Gomes, Helga F; Moraes, Jorge; Romeiro, Nelilma C	Comparative biochemistry and physiology (2019), Volume 222, pp. 74-81 ISSN: 1532-0456 Published by: Elsevier Inc. Source Note: 2019 Aug., v. 222	Category B, Relevant but supplementary articles after detailed assessment	The acute 96 hour-LC50 for zebrafish embryo after exposure to Roundup® was determined to be 58.3 mg/L. Seven test concentrations between 3.5 and 350 mg/L were used with 4 replicates and 20 embryos each. It was stated that the test was performed based on OECD guideline 236. This study type has six validity criteria for the control group, including fertilization rate success (required $\geq 70\%$ in batch tested), hatching rate at 96 hours (required $\geq 80\%$) and overall survival (required $\geq 90\%$). There is also a validity criteria requirement for the results of a positive control group, using 3, 4-dichloroaniline, to achieve a minimum of 30% mortality at 96 hours. There are also two water quality criteria relating to water temperature (required 26 ± 1 °C at any time during the test) and for dissolved oxygen at 96 hours to be $> 80\%$ of the saturation. Whilst dissolved oxygen levels at 6 mg O2/L were achieved in the test, the temperature was outside of the validity criteria limits, being maintained at 28 ± 1 °C for the study duration. Therefore the dissolved oxygen level cannot be confirmed as reporting of dissolved oxygen in terms of mg O2/L requires information on atmospheric pressure and temperature to resolve actual dissolved oxygen in terms of percentage saturation. A slight increase in temperature by a degree Celsius is not overly concerning, however, it is difficult to conclude on the reliability of the study as only one other validity criteria is mentioned, with respect to control survival, with 2% mortality achieved in the controls. There is no information presented on the fertilization rate of the batch of eggs used, nor is there hatching rates presented for the controls or the treatment groups. In addition, the performance of the test system cannot be confirmed as the results of a positive control group were not included. In addition, there are no biological data for the treatment groups presented other than in figures, so the data in the figures cannot be confirmed. Furthermore, claims that the achieved LC50 of 58.3 mg/L is 15,000 times lower than that used in agriculture is not supported by corresponding surface water monitoring data. A final point is that the test concentrations in the test system were not analytically verified and therefore, exposure concentrations cannot be confirmed.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812490-01-1	Effects of glyphosate and its formulation, roundup, on reproduction in zebrafish (<i>Danio rerio</i>).	Uren Webster Tamsyn M Laing Lauren V; Florance Hannah; Santos Eduarda M	Environmental science & technology, (2014 Jan 21) Vol. 48, No. 2, pp. 1271-9. Electronic Publication Date: 9 Jan 2014 Journal code: 0213155. E-ISSN: 1520-5851. L-ISSN: 0013-936X.	Category B, Relevant but supplementary articles after detailed assessment	The test substance Roundup GC is not the representative formulation for the Annex I renewal. There was only a single glyphosate exposure group at 10 mg/L prepared from analytical grade. The purity of the material was not confirmed, but it was stated to be analytical grade. The study provides no endpoints for glyphosate, that could be used in the ecotoxicology risk assessment for Annex I renewal. Thus the study is considered supplementary only.			Y
M-812227-01-1	The effects of Roundup on gametes and early development of common carp (<i>Cyprinus carpio</i> L)	Lugowska Katarzyna	Fish physiology and biochemistry, (2018 Aug) Vol. 44, No. 4, pp. 1109-1117. Electronic Publication Date: 7 Apr 2018 Journal code: 100955049. E-ISSN: 1573-5168. L-ISSN: 0920-1742.	Category B, Relevant but supplementary articles after detailed assessment	The material and methods part of the study lack some important information. The preparation of test solutions is missing. The time course of the experiment is unclear. Furthermore, there was no analytical verification of test concentrations reported. Suitable exposure throughout the study was not demonstrated and thus the reliability of the study is questionable. The performance / validity of the test cannot be confirmed as there was no positive control included validity criteria were not stated. No regulatory endpoint useful for risk assessment is given. The study is not to a guideline and is not GLP.			Y
M-813710-01-1	Toxicity of the herbicide glyphosate to non-target species <i>Caenorhabditis elegans</i>	Alhewairini, S. S.	Journal of Food, Agriculture & Environment (2017), Volume 15, Number 2, pp. 97-101, 35 refs. ISSN: 1459-0255 Published by: World Food Ltd, Helsinki URL (Availability): http://world-food.net/download/journals/2017/2017_-_issue_2_-_environment/e2.pdf	Category B, Relevant but supplementary articles after detailed assessment	The aim of the work presented in the paper was to evaluate the impact of glyphosate exposure on a nematode species, by assessing its feeding activity on bacteria whilst in the presence of glyphosate. The study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The generated endpoints are not based on direct effects on the nematode, but instead, are based on the optical density related to the density of bacteria present in the NGM agar test cultures. It is unclear if the presented mortality data were due to direct effects of glyphosate in the cultures, or due to indirect effects associated with reduced feeding activity. There was no test substance information presented and glyphosate concentrations were not measured / confirmed during the study. Finally, there were no quantifiable endpoints presented in the paper, that would be considered applicable to an EU level ecotoxicological risk assessment.			
M-812426-01-1	Effects of glyphosate on growth rate, metabolic rate and energy reserves of early juvenile crayfish, <i>Cherax quadricarinatus</i> M.	Avigliano L Fassiano A V; Medesani D A; Rios de Molina M C; Rodriguez E M	Bulletin of environmental contamination and toxicology, (2014 Jun) Vol. 92, No. 6, pp. 631-5. Electronic Publication Date: 2 Mar 2014 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Category B, Relevant but supplementary articles after detailed assessment	Enzymatic endpoints discussed that are not used in EU level assessment. Mortality and survival data not discussed in paper.			Y
M-812497-01-1	Exposure to Roundup® affects behaviour, head regeneration and reproduction of the freshwater planarian <i>Girardia tigrina</i>	Cordova Lopez, Ana M; Renato Almeida Sarmento; Althieris de Souza Saraiva; Renata Ramos Pereira; Amadeu M V M Soares; Joao L T Pestana	Science of the total environment (2019), Volume 675, pp. 453-461 ISSN: 0048-9697 Published by: Elsevier B.V. Source Note: 2019 July 20, v. 675	Category B, Relevant but supplementary articles after detailed assessment	This is an invasive flatworm species in the EU. No specific test guidelines are available for this type of study, despite the range of endpoints that appear to have been covered.			Y
M-813143-01-1	Effects of pesticide formulations and active ingredients on the coelenterate <i>Hydra attenuata</i> (Pallas, 1766).	Demetrio Pablo M Bulus Rossini Gustavo D; Bonetto Carlos A; Ronco Alicia E	Bulletin of environmental contamination and toxicology, (2012 Jan) Vol. 88, No. 1, pp. 15-9. Electronic Publication Date: 18 Nov 2011 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Category B, Relevant but supplementary articles after detailed assessment	Endpoints for <i>Hydra attenuata</i> are not a data requirement for the Annex I renewal data requirements under 1107/2009.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812468-01-1	Behavioral responses of juvenile <i>Daphnia magna</i> after exposure to glyphosate and glyphosate-copper complexes.	Hansen Lone Rykaer Roslev Peter	Aquatic toxicology (Amsterdam, Netherlands), (2016 Oct) Vol. 179, pp. 36-43. Electronic Publication Date: 16 Aug 2016 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Category B, Relevant but supplementary articles after detailed assessment	Paper considers the influence of metals in daphnia testing and their influence on toxicity. Soils on the toxicity of endpoints considering speciation and enhanced toxicity in the presence of metals are not used in the EU level ecotox risk assessment.			Y
M-813183-01-1	Toxic impacts of two organophosphorus pesticides on the acetylcholinesterase activity and biochemical composition of freshwater fairy shrimp <i>Streptocephalus dichotomus</i> .	Kumar, M. S. A.; Ali, A. J.	International Journal of Pharma and Bio Sciences (2013), Volume 4, Number 2, pp. B-966-B-972, 41 refs. ISSN: 0975-6299 Published by: International Journal of Pharma and Bio Sciences, Andrapradesh URL (Availability): http://www.ijpbs.net/cms/php/upload/234	Category B, Relevant but supplementary articles after detailed assessment	The test does not follow a recognised test guideline. There are no details on the test design used in the exposure part of the test, such as test media preparation and test vessels / replication details, and the water quality / environmental conditions during the exposure period. Nor are there any validity criteria stated, which are necessary to establish the acceptability of the study (eg. shrimp cyst hatching success and the percentage survival in the control group in both toxicity tests). There are no biological data presented to confirm the reported LC50 values. There is no rationale described justifying the duration of exposure. Details on the test substances used in the test are not presented and there is no analytical verification of test concentrations, so exposure levels cannot be verified. The study is considered unreliable.			
M-813327-01-1	Assessment of median lethal concentration (CL50) of pollutants on <i>Macrobrachium tenellum</i> juveniles	Ruiz-Gonzalez Eduardo, Luis; Rogelio Guerrero-Galvan, Saul [Reprint Author]; Noemi Nieves-Rodriguez, Karen; Berenice Mejia-Acosta, Angelica; Vega-Villasante, Fernando	Latin American Journal of Aquatic Research, (JUL 2018) Vol. 46, No. 3, Sp. Iss. SI, pp. 589-592. http://www.lajar.cl/list_en.php . ISSN: 0718-560X. E-ISSN: 0717-7178.	Category B, Relevant but supplementary articles after detailed assessment	Considered supplementary as the test substance cannot be identified completely, but information presented suggests that this is not the representative formulation for the renewal as it is anyway based on the potassium salt of glyphosate.			
M-813257-01-1	Joint Toxicity of Glyphosate and As(III) to <i>Daphnia magna</i> in Aquatic Environment	Xu, Yang-gui; Li, Jing; Qin, Jun-hao; Li, Qi; Li, Hua-shou	Journal of Agro-Environment Science [J. Agro-Environ. Sci.]. Vol. 34, no. 11, [np]. 2015. ISSN: 1672-2043 Published by: Journal of Agro-Environment Science, 31 Fukang Rd Tianjin 200191 China	Category B, Relevant but supplementary articles after detailed assessment	This study concentrates on models used to estimate the single and mixture toxicity of Glyphosate and As (III) to <i>Daphnia magna</i> . LC50 values were compared with measured data. The study was not conducted to GLP, however the acute toxicity studies to daphnia were conducted to a relevant ISO guideline. Preparation and dose verification were not done therefore the endpoint is questionable. The study is considered unreliable.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813615-01-1	Acute toxicity of a glyphosate herbicide, Roundup (R), to two freshwater crustaceans.	Deepananda, K. H. M. Ashoka [Reprint Author]; Gajamange, D.; De Silva, W. A. J. P.; Wegiriya, H. C. E.	Journal of the National Science Foundation of Sri Lanka, (JUN 2011) Vol. 39, No. 2, pp. 169-173. ISSN: 1391-4588.	Category B, Relevant but supplementary articles after detailed assessment	After exposure to Roundup® the 48 hour acute LC50 for adult copepod <i>Phyllodiaptomus annae</i> was determined to be 1.059 mg/L. This endpoint is questionable as there was only 19% mortality at the highest exposure concentration in the test (1.6 mg/L). For the second species, the 72 and 96 hour LC50 for decapod shrimp <i>Caridina nilotica</i> was determined to be 107.53 and 60.97 mg/L, respectively. However, the mean percent mortality at both timepoints was identical from Table 1 in the paper. As there are no biological data presented in the paper, the observed mortality and the LC50 calculation cannot be confirmed. The formulation content is identified as Roundup® (360g/L, 98%). However, the presented purity appears to be incorrectly stated, as a formulation with 98% purity, would suggest a technical material has been used, so there is uncertainty in actually what has been tested in the study. The tests were conducted according to EPA Guideline "Methods of Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms". However, the origin of the organisms is not given. Therefore, exposure the test species may have had to pesticides or other chemicals previously is unclear. Furthermore, there was no analytical verification of test concentrations reported and the study is non-GLP, thus the reliability of the endpoint is questionable. Given the uncertainty in what was actually tested, the calculated endpoints and the conduct of the test, the study is considered unreliable for use in the ecotoxicology risk assessment for Annex I renewal of glyphosate.			Y
M-803469-01-1	Analysis of the toxicity of glyphosate and Faena (R) using the freshwater invertebrates <i>Daphnia magna</i> and <i>Lecane quadricornata</i> .	Dominguez-Cortinas, G.; Saavedra, J. Mejia; Santos-Medrano, G. E.; Rico-Martinez, Roberto	Toxicological and Environmental Chemistry, (2008) Vol. 90, No. 2, pp. 377-384. http://www.tandfonline.com/loi/gtec20	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			Y
M-803462-01-1	Estimation of toxicity of glyphosate -based herbicides by biotesting method using <i>Cladocera</i> .	Melnichuk, S. D.; Shcherban, E. P.; Lokhanskaya, V. I.	Hydrobiological Journal, (2007) Vol. 43, No. 3, pp. 80-91. http://www.dl.begellhouse.com/journals/38cb2223012b73f2.html .	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			Y
M-812420-01-1	Ecotoxicological effects of different glyphosate formulations	Sihtmae, M; Blinova, I; Kuennis-Beres, K; Kanarbik, L; Heinlaan, M; Kahru, A	Applied soil ecology (2013), Volume 72, pp. 215-224 ISSN: 0929-1393 Published by: Elsevier B.V. Source Note: 2013 Oct., v. 72	Category B, Relevant but supplementary articles after detailed assessment	The study design and overall conduct were well described. The <i>D. magna</i> toxicity test was performed according to OECD guideline 202 but validity criteria were not mentioned. Analytical verification of the test materials and exposure concentrations within the study was also lacking. Overall, the study is considered to be of limited relevance to the EU annex renewal of glyphosate as the <i>D. magna</i> toxicity test was only a small part of the study, and the soil portion of the study was conducted using exaggerated soil concentrations (up to 1000 times relevant levels). For these reasons, the study is considered supplemental only.			
M-813204-01-1	The effect of cypermethrin, chlorpyrifos, and glyphosate active ingredients and formulations on <i>Daphnia magna</i> (Straus).	Demetrio Pablo M Bonetto Carlos; Ronco Alicia E	Bulletin of environmental contamination and toxicology, (2014 Sep) Vol. 93, No. 3, pp. 268-73. Electronic Publication Date: 24 Jul 2014 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Category B, Relevant but supplementary articles after detailed assessment	The aim of the study was to investigate the difference of acute toxicity of active substance glyphosate and a glyphosate formulation to <i>D. magna</i> . The test was not performed according to a relevant guideline. Although procedures are well documented, the water qualities during testing are not reported (only stock culture holding conditions are reported) and the test design in the study is not described, such as the number of animals exposed, test media preparation details and acclimation period prior to exposure. There are no biological data presented in order to confirm the achieved endpoints. The glyphosate formulation used in the testing is not the representative formulation for the Annex I renewal. Apparent from the endpoints achieved for the technical material and for the formulation, is the increased sensitivity of <i>daphnia</i> to the formulation, which is considered attributable to the co-formulants in the formulation and not to glyphosate. Based on the uncertainty associated with the materials and methods as described above, the study is considered as supplementary only.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-810741-01-1	Acute toxicity of Roundup and carbosulfan to the Thai fairy shrimp, <i>Branchinella thailandensis</i> .	Boonsoong B Bullangpoti V	Communications in agricultural and applied biological sciences, (2012) Vol. 77, No. 4, pp. 431-7. Journal code: 101200320. ISSN: 1379-1176. L-ISSN: 1379-1176.	Category B, Relevant but supplementary articles after detailed assessment	The purpose of this study was to evaluate the potential toxicity of glyphosate to <i>B. thailandensis</i> fairy shrimp. The study was not conducted according to a recognised test guideline and no validity criteria are presented for control group performance, so the robustness of the assay can not be concluded. In the materials and methods, there is insufficient information presented on the test medium preparation approach and on the environmental conditions used in the test which are not presented. There was no chemical analysis and therefore exposure cannot be confirmed. There are insufficient explanations provided on the experimental design, particularly environmental condition and conduct during the test. The study is considered unreliable.			Y
M-813363-01-1	Effects of Glyphosate-Based and Derived Products on Sea Urchin Larval Development	Asnicar, Davide (Reprint); Cappelli, Costanza; Marin, Maria Gabriella Sallehuddin, Ahmad Safuan; Maznan, Nur Atiqah	JOURNAL OF MARINE SCIENCE AND ENGINEERING, (2020 SEP 2020) Vol. 8, No. 9.	Category B, Relevant but supplementary articles after detailed assessment	Provides information on the effects of glyphosate, AMPA and Roundup on the larval development of sea urchins but no risk assessment relevant endpoints are given. The study does not alter the existing risk assessment. The purity of glyphosate and AMPA are not provided. The urchins were collected from the open environment and could have been exposed previously to pesticides. The experimental conditions are inadequately described (it is unclear if oxygen saturation > 80% applies to all treatment or just for respiration rate treatment). Light conditions are not reported. No validation data or analytical verifications are provided. No Ex assessment was conducted.			
M-805376-01-1	Toxicity of the herbicide glyphosate to <i>Chordodes nobilii</i> (Gordiida, Nematomorpha).	Achierno Cecilia L; Villalobos Cristina De; Ferrari Lucrecia	Chemosphere, (2008 May) Vol. 71, No. 10, pp. 1816-22. Electronic Publication Date: 3 Apr 2008	Category B, Relevant but supplementary articles after detailed assessment	Data on adult mortality are not relevant, because the test was conducted with a Roundup formulation. The endpoint for larvae is based on infective capacity (of previously exposed larvae or embryos) for which significant differences compared to control were demonstrated at all tested concentrations. Therefore, a LOEC is the only endpoint that can be established from this study and a LOEC cannot be used in the aquatic RA. Results are considered as only supportive.			Y
M-806677-01-1	Effects of Fakel herbicide on vital activity of <i>Ceriodaphnia affinis</i> in acute and chronic experiments.	Melnichuk, S. D.; Scherban, Ye. P.; Lokhanskaya, V. I.	Hydrobiological Journal, (2007) Vol. 43, No. 6, pp. 83-91.	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			Y
M-806148-01-1	The parameters of reproduction, sizes, and activities of hydrolases in <i>Daphnia magna</i> strains of successive generations affected by Roundup herbicide.	Papchenkova, G. A.; Golovanova, I. L.; Ushakova, N. V.	Inland Water Biology, (JUL 2009) Vol. 2, No. 3, pp. 286-291. ISSN: 1995-0829.	Category B, Relevant but supplementary articles after detailed assessment	The article shows significant effects compared to the control for some variables and no effects for some other, so no clear endpoint from this study can be used for the risk assessment. Results are considered as only supportive.			
M-813566-01-1	Toxicity and risk assessment of six widely used pesticides on embryo-larval development of the Pacific oyster, <i>Crassostrea gigas</i> .	Bringer Arno; Thomas Helene; Prunier Gregoire; Dubillot Emmanuel Clerandeau Christelle Pageaud Marius Cachot Jerome	The Science of the total environment, (2021 Jul 20) Vol. 779, pp. 146343. Electronic Publication Date: 13 Mar 2021 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	The test design allows for the derivation of NOECs, but for the most sensitive endpoint (Abnormal D-larvae (%)), the NOEC was below the lowest tested concentration, therefore no regulatory relevant endpoint can be determined. However, the study provides supplementary information on the sub-lethal effects of glyphosate on oyster larvae (specifically <i>Crassostrea gigas</i>) and could be useful as part of a broader discussion			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813362-01-1	Sensitivity differences among seven algal species to 12 herbicides with various modes of action.	Nagai, T.	Journal of Pesticide Science (2019), Volume 44, Number 4, pp. 225-232, 26 refs. ISSN: 1348-589X DOI: 10.1584/jpestics.D19-039 Published by: Pesticide Science Society of Japan, Tokyo	Category B, Relevant but supplementary articles after detailed assessment	For glyphosate no data presented that could impact the endpoints used in the risk assessment as they have been achieved using a method that is not recognised at the EU level. Reference to available data is considered a secondary source and therefore not relevant to EU renewal. Validity criteria not reported. ErC50 were calculated at 96h instead of at 72h. The initial green algae biomass concentration was not reported. The test substance was not clearly identified (purity unclear). Control results missing.			
M-813374-01-1	The Growth, Apoptosis and Oxidative Stress in <i>Microcystis viridis</i> Exposed to Glyphosate	Ye, Jing; Huang, Chen; Qiu, Zhihao; Wu, Liang Xu, Chao	Bulletin of environmental contamination and toxicology (Oct 2019), Volume 103, Number 4, pp. 585-589, 5 p. ISSN: 0007-4861	Category B, Relevant but supplementary articles after detailed assessment	Provides relevant information on the effects of glyphosate on the growth of <i>Microcystis viridis</i> at 4 different concentrations every 24 h for 10 days but no endpoints are given. The algal growth inhibition test was conducted according to the OECD guideline 201-Freshwater Alga and Cyanobacteria (2011). However, as no raw data and only results in figures were presented, it is not possible to check its validity criteria. No reference substance has been tested. Analytical verifications were performed but it is not clear in the study whether they are only made at the test start or also during the study. Analytically, over a 3 day period, glyphosate is very stable under illuminated conditions. Under 240 hours exposure, it is highly unlikely that the authors could have achieved such high recoveries, hence the thought would be that the measured values presented were initial measured concentrations. The duration of the study is longer than recommended (10 days instead of 3), but growth rate is recorded after 72 h. There is not sufficient information presented to corroborate the findings.			
M-813457-01-1	Low-dose stimulation of growth of the harmful alga, <i>Prymnesium parvum</i> , by glyphosate and glyphosate-based herbicides.	Dabney Brittan L Patino Reynaldo	Harmful algae, (2018 Dec) Vol. 80, pp. 130-139. Electronic Publication Date: 17 Nov 2018 Journal code: 101128968. E-ISSN: 1878-1470. L-ISSN: 1568-9883.	Category B, Relevant but supplementary articles after detailed assessment	This paper does not present endpoints that can be used in the Ecotox risk assessment for Annex I renewal. The information are however considered supportive to discussions over hormesis.			Y
M-813185-01-1	Alterations in some metabolic activities of <i>Scenedesmus quadricauda</i> and <i>Merismopedia glauca</i> in response to glyphosate herbicide.	Issa, A. A. E.; Adam, M. S.; Fawzy, M. A.	Journal of Biology and Earth Sciences (2013), Volume 3, Number 1, pp. B17-B23, 38 refs. ISSN: 2084-3577 Published by: Journal of Biology and Earth Sciences, Suchy Las URL (Availability): http://www.journals.tmkarpinski.com/index.php/jbes/article/view/33/	Category B, Relevant but supplementary articles after detailed assessment	The reported endpoints in terms of growth rates and pigment levels are not relateable to the EU level risk assessment for Annex renewal. The identity of the test items cannot be confirmed.			
M-812279-01-1	Toxicity of herbicides to cyanobacteria and phytoplankton species of the San Francisco Estuary and Sacramento-San Joaquin River Delta, California, USA.	Lam Chelsea H; Kurobe Tomofumi; Hammock Bruce G; Stillway Marie E; Teh Swee J Lehman Peggy W Berg Mine Pandey Pramod K	Journal of environmental science and health. Part A, Toxic/hazardous substances & environmental engineering, (2019 Oct 23) pp. 1-12. Electronic Publication Date: 23 Oct 2019 Journal code: 9812551. E-ISSN: 1532-4117. L-ISSN: 1093-4529.	Category B, Relevant but supplementary articles after detailed assessment	As the composition of the Roundup used in the test cannot be confirmed, the study must be considered as being supplementary. Roundup custom is for aquatic uses so would not contain surfactants. It is not clear from the study if the product was tested with an approved surfactant added or not as would be detailed on the label. There is limited information in the paper on the label. Roundup custom is not the representative formulation for the Annex I and aquatic uses are not on the current GAP table.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813379-01-1	Determination of the Ecotoxicity of Herbicides Roundup (R) Classic Pro and Garlon New in Aquatic and Terrestrial Environments.	Tajnaiova, Lucia [Reprint Author]; Vurm, Radek; Kholomyeva, Marina; Kobera, Miroslav; Koci, Vladimir	Plants-Basel, (SEP 2020) Vol. 9, No. 9, pp. Article No.: 1203. http://www.mdpi.com/journal/plants . E-ISSN: 2223-7747.	Category B, Relevant but supplementary articles after detailed assessment	This study investigates the effect of Roundup® Classic Pro (not relevant for the AIR5, as it contains the additive surfactant ether alkylamine ethoxylate) and AMPA on the aquatic organisms duckweed Lemna minor and green algae Desmodesmus subspicatus and on the enzymatic activity of soil. The endpoints for AMPA do not alter existing risk assessment but are supportive of low exposure risk (relevant growth inhibition endpoints obtained for both green algae and macrophytes: Desmodesmus subspicatus (green alga): 72 h AMPA IC50 = 117.8 mg/L; 72 h AMPA IC50 with pH adjusted solution = 192.1 mg/L). No analytical verifications of the test item concentrations in the medium were conducted. The experimental design was carried out according to the following standards: EN ISO 8692 (Water Quality-Fresh Water Algal Growth Inhibition Test with Unicellular Green Algae (ISO 8692:2012)) and EN ISO 20079 (Water Quality-Determination of the Toxic Effect of Water Constituents and Waste Water on Duckweed (Lemna minor)-Duckweed Growth Inhibition Test (ISO 20079:2005)). Only the IC50 assessment was performed. There is no analytical to confirm exposure. Results are also ambiguous in that % inhibition plots are presented but data presented is unknown (rate or biomass or cell density?).			
M-803567-01-1	EFFECTS OF ACUTE GLYPHOSATE EXPOSURE ON THE GROWTH AND PHYSIOLOGY OF NOSTOC SPHAEROIDES, AN EDIBLE CYANOBACTERIUM OF PADDY RICE FIELDS.	Ruan Zuo-Xi; Brown, Murray T.	Acta Hydrobiologica Sinica, (JUL 2008) Vol. 32, No. 4, pp. 462-468. http://sswxb.ihb.ac.cn/EN/volumn/current.shtml . ISSN: 1000-3207.	Category B, Relevant but supplementary articles after detailed assessment	Taking into account that the sampling dates and measured variables do not comply with guidelines, the results of the study are considered only as supportive/supplementary.			
M-813245-01-1	Assessment of the potential toxicity of glyphosate-based herbicides on the photosynthesis of Nitella microcarpa var. wrightii (Charophyceae)	de Campos Oliveira, Regis; Boas, Lucas Kortz Vilas; Branco, Ciro Cesar Zanini	Phycologia [Phycologia]. Vol. 55, no. 5, 577 p. Sep 2016. ISSN: 0031-8884 DOI: 10.2216/16-12.1 Published by: International Phycological Society, P.O. Box 1897 Lawrence KS 66044-8897 United States	Category B, Relevant but supplementary articles after detailed assessment	Despite the study using a recognised OECD guideline, the endpoints in terms of respiration rates are not relevant to an EU level risk assessment for Annex I renewal, which specifically considers inhibition of glyphosate growth rates. The study considers technical gly, Roundup and AMPA. Despite the technical material being identified, the formulation was not. It is not possible to conclude on the effects caused by the formulation as it was inferred that the product contains POEA. If this is the case then it is not relevant to EU level assessment.			Y
M-813219-01-1	Using a toxicity test with Ruppia maritima (Linnaeus) to assess the effects of Roundup.	de Jesus Veloso Castro Aline; Cutrim Marco Valerio Jansen Colares Ioni Gonçalves Franco Teresa Cristina Rodrigues dos Santos Luvizotto-Santos Ricardo	Marine pollution bulletin, (2015 Feb 28) Vol. 91, No. 2, pp. 506-10. Electronic Publication Date: 25 Oct 2014 Journal code: 0260231. E-ISSN: 1879-3363. L-ISSN: 0025-326X.	Category B, Relevant but supplementary articles after detailed assessment	This paper presents information on the effects of glyphosate on a saline tolerant species. However, there is no glyphosate exposure presented in the paper so it is very difficult to relate the observed effects to an exposure event / agricultural application			
M-813342-01-1	Acute Toxicity of Herbicides and Sensibility of Aquatic Plant Wolffia brasiliensis as a Bioindicator Organism	Pereira, P C ; Brunetti, Ia ; Castro, K S ; Chiarotti, L F ; Santos, B E ; Moraes, J C ; C CRUZ http://orcid.org/0000-0003-4064-0718	Planta Daninha, Vol. 37, 20190101 ISSN: 0100-8358 E-ISSN: 1806-9681 DOI: 10.1590/s0100-83582019370100092 Published by: Sociedade Brasileira da Ciencia das Plantas Daninhas, UFV - Depto de Fitotecnica, Jaboticabal	Category B, Relevant but supplementary articles after detailed assessment	This paper describes a non-standard aquatic plant ecotoxicity test for a non-EU native species, and is therefore difficult to relate to an EU level ecotox risk assessment. The formulation used is specific to aquatic applications that are not on the proposed GAP for the AIR5 renewal.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813207-01-1	The effect of glyphosate-based herbicide on aquatic organisms - a case study.	Rzymiski, P.; Klimaszewski, P.; Kubacki, T.; Poniedziak, B.	Limnological Review (2013), Volume 13, Number 4, pp. 215-220, 29 refs. ISSN: 1642-5952 Published by: De Gruyter Open, Warsaw URL (Availability): http://www.degruyter.com/view/j/limr	Category B, Relevant but supplementary articles after detailed assessment	Information may be relevant to the wider discussion on trophic interactions, but cannot be related to the EU level ecotox risk assessment for Annex I renewal in the EU.			
M-488799-01-1	The impact of pesticides toward parrotfeather when applied at the predicted environmental concentration	Turgut, Cafer	Chemosphere (2006), Volume Date 2007, 66(3), 469-473	Category B, Relevant but supplementary articles after detailed assessment	The article shows significant effects compared to the control at the only tested rate for some variables and no effects for some other, so no clear endpoint from this study can be used for the risk assessment. Results are considered as only supportive.			Y
M-806113-01-1	Direct and indirect effects of the herbicides Glyphosate , Bentazone and MCPA on eelgrass (Zostera marina).	Nielsen Line Winkel; Dahllöf Ingela	Aquatic toxicology (Amsterdam, Netherlands), (2007 Apr 20) Vol. 82, No. 1, pp. 47-54. Electronic Publication Date: 30 Jan 2007	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			Y
M-813567-01-1	Effects of microplastics and glyphosate on growth rate, morphological plasticity, photosynthesis, and oxidative stress in the aquatic species Salvinia cucullata.	Yu Hongwei Peng Jianfeng; Cao Xiaofeng; Wang Yajun; Xu Yan Zhang Zhiqiang Qi Weixiao	Environmental pollution (Barking, Essex : 1987), (2021 Jun 15) Vol. 279, pp. 116900. Electronic Publication Date: 13 Mar 2021 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The study reports on effects of microplastics and glyphosate on growth rate, morphological plasticity, photosynthesis, and oxidative stress in the aquatic species Salvinia cucullata. Of all reported endpoints, only plant growth variables (relative growth rate (RGR), average specific leaf growth rate (ASLG), and yellow-leaf percentage (YLP)) are not on a molecular or cellular level and could be of potential relevance for an EU-level risk assessment for aquatic plants. It should be noted that currently no standardized test guideline for the testing of chemicals with Salvinia cucullata exists. Furthermore, no regulatory relevant endpoints were calculated (e.g. ECx) and the results were not presented in a way that would allow conducting such calculations retroactively. However, it can be inferred from the study that the NOEC for relative growth rate would be 25 mg glyphosate/L and this could therefore serve as supporting information in a regulatory context.			
M-460903-01-1	Toxicity evaluation with Vibrio fischeri test of organic chemicals used in aquaculture.	Hernando, M. D.; De Vettori, S.; Martinez Bueno, M. J.; Fernandez-Alba, A. R.	Chemosphere, Volume 68, Issue 4, Page 724-730, Publication Year 2007	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813378-01-1	Freshwater periphyton response to technical-grade and two commercial formulations of glyphosate.	Gonzalez, Daniela [Reprint Author]; Juarez, Angela; Pamela Krug, C.; Santos, Marina; Solange Vera, M. [Reprint Author]	Ecologia Austral, (APR 2019) Vol. 29, No. 1, pp. 20-27. http://www.scielo.org.ar/scielo.php/seript_sci_serial/pid_1667-782X/ing_en/nrm_iso . ISSN: 1667-782X. E-ISSN: 1667-782X.	Category B, Relevant but supplementary articles after detailed assessment	The effects of a single glyphosate concentration (3 mg/L; 2, 5 and 9 days after application) provided by different means (pure glyphosate and 2 different formulations) on the structure of the microbial community in a freshwater microcosm were investigated. Pigments concentration, dry weight, ash-free dry weight, and algal density were determined. Effects on the control were provided and analytical verifications were made. An increase of Cyanobacteria and a decrease of algae abundances were registered in all treatments with the herbicide. The effect was greater for the formulations and lower with technical-grade glyphosate, suggesting that additives in the commercial formulations may enhance glyphosate effects. The test is not performed according to any OECD guidance, and no endpoints are given. The study is well written and published in an SCI journal. The article presents results for a microcosm type experiment where by, 2 Litre treatment units were established with periphyton grown on substrates from a mesocosm. All substrates were pre-exposed to mesocosm water for 36 days, after which time substrates became colonised. Microbial communities were not assessed. Test water was prepared from centrifuged mesocosm water and then 5 pre-grown substrate boards were suspended in each of the three treatments + control. The test does not follow a recognised test design and there is some uncertainties with the methods used for identifying species and for example, how were dead diatoms determined. Despite these substrates being naturally colonised, there is no discussion over the zooplankton community that would also have been present on the substrates including / but not limited to rotifers. The influence of other factors on the periphyton assemblages on the substrates is not discussed.			
M-812290-01-1	Understanding the influence of glyphosate on the structure and function of freshwater microbial community in a microcosm.	Lu Tao; Xu Nuohan; Zhang Qi; Zhang Zhenyan; Zhou Zhigao; Sun Liwei; Debognies Andries; Qian Haifeng	Environmental pollution (Barking, Essex : 1987), (2020 May) Vol. 260, pp. 114012. Electronic Publication Date: 22 Jan 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The effects of single glyphosate concentration (2.5 mg/L, 15 days) on the structure and function of microbial communities in a freshwater microcosm were investigated. This treatment did not significantly alter the physical and chemical condition of the microcosm or the composition of the main species in the community, but the transcriptions of some cyanobacteria were significantly influenced. Under glyphosate stress, the microbial community structure did not change much, but the microbes' function varied a lot. The test is not performed according to any OECD guidance, but the outcomes on the aquatic microbial community (algae, cyanobacteria) can be relevant for the risk assessment but no endpoints are given. The test seems to be reliable with the restriction but there is a lack of analytical verifications of the product concentration on the artificial medium and that the samples are from a lake and therefore, previous exposure to pesticides cannot be excluded. The article is very well written and described and published in a highly reputable SCI journal.			
M-813229-01-1	Histopathological effects of lethal and sub-lethal concentrations of glyphosate on gills and liver of African catfish, <i>Clarias gariepinus</i> .	Abdulkareem, S. I.; Oraezue, P. I.; Olaniyan, A. T.	Journal of Aquatic Sciences (2015), Volume 30, Number 1, pp. 53-61 ISSN: 0189-8779 Published by: Association for Aquatic Sciences of Nigeria (AASN), Jos URL (Availability): http://journalofaquaticsciences.com/index.php/journalofaquaticsciences.com/current-issue2/2015-vol-30	Category B, Relevant but supplementary articles after detailed assessment	The aim of the work presented in the paper was to evaluate the acute and potential sub-lethal effects of glyphosate on fish and enzyme activities in the blood of African catfish. Although blood, gill and liver enzyme levels are not relatable to an EU level ecotoxicological risk assessment for Annex I renewal purposes, the study was considering acute effects and chronic sublethal effects on fish following exposure to glyphosate were described. However, the study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The environmental holding conditions (water quality) for the fish prior to and during the study were not included. The fish loading rate (g/fish L) was 20.5 g fish/L, which far exceeds the loading rate required for chronic static renewal fish tests typically required for studies submitted to support regulatory submission for Annex I renewals in the EU (0.8 to 1.0 g fish/L). The impact of such high fish densities cannot be established, as no water quality measurements were included in their paper, such as the dissolved oxygen levels (mgO ₂ /L) and pH values. There was no test substance information presented, Glyphosate concentrations were not measured / confirmed during the 28 day study duration. Behavioural observations in test vessels could not be related to the nominal exposure concentration. Finally, there were no quantifiable endpoints presented in the paper, considered applicable to an EU level ecotoxicological risk assessment for renewal purposes.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813230-01-1	Effects of sub-lethal concentrations of glyphosate on behaviour and some biochemical parameters of African catfish (<i>Clarias gariepinus</i>)	Abdulkareem, SI; Lawal, NO	Proceedings of the 28th annual conference of the Fisheries Society of Nigeria. pp. 188-191. 2013. Editor(s): Ndimele, E Published by: FISON, Lagos (Nigeria), [mailto:fison2011@yahoo.com] Conference: 28th annual conference of the Fisheries Society of Niger	Category B, Relevant but supplementary articles after detailed assessment	The aim of the work presented in the paper was to evaluate potential sub-lethal effects of glyphosate on fish behavior and enzyme activities in the blood of African catfish. Although blood, gill and liver enzyme levels are not relatable to an EU level ecotoxicological risk assessment for Annex I renewal purposes, the study was considered as sublethal effects on fish behaviour following exposure to glyphosate were described. However, the study has not been conducted according to a recognised test guideline and there are no validity criteria presented. The fish species and their origin are not described and environmental holding conditions (water quality) for the fish prior to and during the study have not been included. The fish loading rate (g/fish L test medium) was 20.5 g fish/L, which far exceeds the loading rate required for chronic static renewal fish tests typically required for studies submitted to support regulatory submission for Annex I renewals in the EU (0.8 to 1.0 g fish/L). The impact of such high fish densities cannot be established, as no water quality measurements were presented such as levels of dissolved oxygen (mgO ₂ /L) and pH. There was no test substance information presented, with no rationale presented for the selection of exposure concentrations. Glyphosate concentrations were also not measured / confirmed during the 28 day study duration. Behavioural observations relating to the swimming activity are not relatable to the nominal exposure concentration. Finally, there are no quantifiable endpoints presented in the paper, considered applicable to an EU level ecotoxicological risk assessment.			
著作権上提出不能	The potential impact of Glyphosate on captured fisheries productivity and sustainability	Agbon, AOI; Tope-Ajayi, OO; Abdul, WO; Akinyemi, AA; Odulate DO; Adeosun, FI	Proceedings of the 29th annual conference of the Fisheries Society of Nigeria (FISON). pp. 17-19. 2014. Editor(s): Solomon, SG Published by: FISON, Lagos (Nigeria) Conference: 29th annual conference of the Fisheries Society of Nigeria (FISON), Makurdi (Ni	Category B, Relevant but supplementary articles after detailed assessment	The aim of the work presented in the paper was to evaluate the acute effects of glyphosate on fish and enzyme activities in the blood of African catfish. Although blood, gill and liver enzyme levels are not relatable to an EU level ecotoxicological risk assessment for Annex I renewal purposes, the study did consider acute effects on fish following exposure to glyphosate. However, the study was not conducted according to a recognised acute test guideline and there are no validity criteria presented. The overall study duration was 35 days, from which a 96 hr LC50 value was determined. There are no data presented in the paper in terms of mortalities over the first 4 days from which a 96 hr LC50 could be determined. The fish also appear to have been fed for the 35 day duration, which is not in accordance with the recognised acute fish toxicity test guideline used according to the EU No. 283 2013 data requirements. The environmental holding conditions (water quality) for the fish prior to and during the study were not included. The fish loading rate (g/fish L) cannot be determined as no test vessel water volumes are presented. There are no water quality measurements included in their paper, such as the dissolved oxygen levels (mgO ₂ /L) and pH values. There was no test substance information presented, Glyphosate concentrations were not measured / confirmed during the 35 day study duration. No sub-lethal behavioural observations were included in the paper. Finally, the presented endpoints cannot be confirmed from the presented information in the paper. The study can be considered unreliable and thus supplementary only.			
M-630667-01-1	Unique efficacy of certain novel herbicides against <i>Culex pipiens</i> (Diptera: Culicidae) mosquito under laboratory conditions	Mohamed, Ibrahim Abdel-wahab; Ahmed, Mohamed A. I.; Saba, Reda Mahfouz	Advances in Environmental Biology, (2016) Vol. 10, No. 8, pp. 104-111. CODEN: AEBDAA. ISSN: 1998-1066.	Category B, Relevant but supplementary articles after detailed assessment	Important information is missing in the material and methods section. The preparation and application of the test solutions as well as the tested concentration range were not reported. The test items were not adequately specified. It is not clear whether the test concentrations refer to the product or to the active substance. Moreover one active ingredient is given as glyphosate isopropylamine which should be formulated as a salt resulting in test concentrations as acid equivalents. In addition, the biological results of the test were not sufficiently stated. No mortality data neither for the test concentrations nor for the controls was given to evaluate the results. Furthermore, there was no analytical verification of test concentrations reported. The study is not to a guideline and is not GLP. The study is considered unreliable.			
M-812417-01-1	Effects of glyphosate-based herbicides on embryo-larval development and metamorphosis in the Pacific oyster, <i>Crassostrea gigas</i> .	Mottier Antoine Kientz-Bouchart Valerie; Serpentine Antoine; Lebel Jean Marc; Jha Awadhesh N; Costil Katherine	Aquatic toxicology (Amsterdam, Netherlands), (2013 Mar 15) Vol. 128-129, pp. 67-78. Electronic Publication Date: 10 Dec 2012 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Category B, Relevant but supplementary articles after detailed assessment	The study was not conducted to GLP and/or according to a recognized test guideline and there are no validity criteria presented. The authors state that the EC50 values computed for the embryotoxicity tests with glyphosate and AMPA were lower than the values reported for regulatory model organisms and the embryotoxicity test appeared more sensitive but also a little more difficult to assess compared to the metamorphosis assay. Given the limitations cited, the study is considered unreliable.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813536-01-1	Effect of herbicides based on glyphosate on the photosynthesis of green macroalgae in tropical lotic environments	Oliveira, Regis de Campos (Reprint); Vilas Boas, Lucas Kortz; Zanini Branco, Ciro Cesar	FUNDAMENTAL AND APPLIED LIMNOLOGY, (2021 2021) Vol. 195, No. 2, pp. 85-93. ISSN: 1863-9135.	Category B, Relevant but supplementary articles after detailed assessment	The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for algae (it cannot be integrated into the risk assessment scheme because measured variables and endpoints are not in line with the guidance), but its findings can be used as supportive information in a broader discussion of the effects of glyphosate on aquatic organisms (specifically macroalgae). The species tested are widely distributed and frequently reported as representatives of Chlorophyta in lotic macroalgal communities in Brazil.			
M-806143-01-1	Response of spring and summer riverine microbial communities following glyphosate exposure .	Pesce Stephane; Batisson Isabelle; Bardot Corinne; Fajon Celine; Portelli Christophe; Montuelle Bernard; Bohatier Jacques	Ecotoxicology and environmental safety, (2009 Oct) Vol. 72, No. 7, pp. 1905-12. Electronic Publication Date: 30 Jul 2009	Category B, Relevant but supplementary articles after detailed assessment	Although at 10 µg/L no differences between treated and control were detected for chlorophyll content and biomass data (i.e. NOEC), the study does show effects in the community composition at that concentration for the higher temperature. In the treated microcosms, three algal genera (Asterionella, Cyclotella and Oocystis) disappeared between day 0 and day 3. Therefore, a LOEC is the only endpoint that can be established from this microcosm study and a LOEC cannot be used in the aquatic RA. Results are considered as only supportive.			
M-803646-01-1	Assessment of the potential toxicity of herbicides and their degradation products to nontarget cells using two microorganisms , the bacteria Vibrio fischeri and the ciliate Tetrahymena pyriformis.	Bonnet J-L; Bonnemoy F; Dusser M; Bohatier J	Environmental toxicology, (2007 Feb) Vol. 22, No. 1, pp. 78-91.	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			Y
M-803561-01-1	Effects of pesticides on community composition and activity of sediment microbes -responses at various levels of microbial community organization.	Widenfalk Anneli; Bertilsson Stefan; Sundh Ingvar; Goedkoop Willem	Environmental pollution (Barking, Essex : 1987), (2008 Apr) Vol. 152, No. 3, pp. 576-84. Electronic Publication Date: 5 Sep 2007	Category B, Relevant but supplementary articles after detailed assessment	Detected effects of this study are based on molecular methods that cannot be univocally integrated in the risk assessment. In addition a LOEC cannot be used in the aquatic RA. The article failed to demonstrate effects of glyphosate exposure on community-level endpoints of sediment microorganisms (bacterial activity, fungal and total microbial biomass). Results are considered as only supportive.			
M-812241-01-1	Glyphosate impairs learning in Aedes aegypti mosquito larvae at field-realistic doses.	Baglan Hugo; Lazzari Claudio R; Guerrieri Fernando J	The Journal of experimental biology, (2018 Oct 17) Vol. 221, No. Pt 20. Electronic Publication Date: 17 Oct 2018 Journal code: 0243705. E-ISSN: 1477-9145. L-ISSN: 0022-0949.	Category B, Relevant but supplementary articles after detailed assessment	Information presented informs on learning behaviour of mosquito larvae exposed to glyphosate. These data are difficult to relate to an EU level ecotox risk assessment for Annex I renewal.			Y
M-812415-01-1	Sublethal effects of atrazine and glyphosate on life history traits of Aedes aegypti and Aedes albopictus (Diptera: Culicidae).	Bara Jeffrey J; Montgomery Allison; Muturi Ephantis J	Parasitology research, (2014 Aug) Vol. 113, No. 8, pp. 2879-86. Electronic Publication Date: 23 May 2014 Journal code: 8703571. E-ISSN: 1432-1955. L-ISSN: 0932-0113.	Category B, Relevant but supplementary articles after detailed assessment	The test provides information on the impact of glyphosate on mosquito development, but the test design employed is not a recognised approach used for Annex I data generation for renewal purposes. Test item purity not stated, only pestanol grade. No chemical analysis.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812473-01-1	Disruption of the chemical communication of the European agrobiont groundaX80X90dwelling spider Pardosa agrestis by pesticides	Leccia, F; E LA-znarovAXA1; K HamouzovAXA1; K KysilkovAXA1; M KolAXA1AX99ovAXA1; S Korenko	Journal of applied entomology (2016), Volume 140, Number 8, pp. 609-616 ISSN: 0931-2048 Published by: John Wiley & Sons, Ltd Source Note: 2016 Sept., v. 140, no. 8	Category B, Relevant but supplementary articles after detailed assessment	Endpoints based on the impact of chemicals on spider pheromones are not used in EU level ecotoc risk assessment.			Y
M-813344-01-1	Comparative selectivity of herbicides used in wheat crop on the predators Chrysoperla externa and Eriopis connexa	Pasini, R. A.; Pazini, J. B.; Gruetzmacher, A. D.; Rakes, M.; Armas, F. S.	Planta Daninha (2018), Volume 36, e018179968 p., 31 refs. ISSN: 0100-8358 DOI: 10.1590/s0100-83582018360100135 Published by: Sociedade Brasileira da Ciencia das Plantas Daninhas, Viciosa URL (Availability): http://www.scielo.br/scielo.php?script=sci_arttex	Category B, Relevant but supplementary articles after detailed assessment	In the material and methods part important information are missing. The test items were not adequately specified regarding the content of the active ingredient. It is unclear whether the given active ingredient concentration in the spray solution corresponds to the content of the active ingredient in the formulation. The test did not follow a specific test guideline, although the culturing of the insects was conducted according to recognised approaches. There were no validity criteria established and the performance of the assays was not assessed using a positive control substance. An endpoint that could be used in an ecotoxicology risk assessment was not established.			Y
M-813262-01-1	Treatment by glyphosate-based herbicide alters life history parameters of the rose-grain aphid Metopolophium dirhodum.	Saska Pavel; Skuhrovec Jiri; Lukas Jan; Honek Alois Chi Hsin; Tuan Shu-Jen	Scientific reports, (20160615) Vol. 6, pp. 27801. Electronic Publication Date: 15 Jun 2016 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC4908594.	Category B, Relevant but supplementary articles after detailed assessment	The paper does not present endpoints that could be used in an EU level ecotox risk assessment.			Y
M-812452-01-1	Side-Effects of Glyphosate to the Parasitoid Telenomus remus Nixon (Hymenoptera: Platygasteridae).	Stecca C S; Pasini A; Andrade K; Filho D M Z Bueno A F Silva D M	Neotropical entomology, (2016 Apr) Vol. 45, No. 2, pp. 192-200. Electronic Publication Date: 3 Feb 2016 Journal code: 101189728. E-ISSN: 1678-8052. L-ISSN: 1519-566X.	Category B, Relevant but supplementary articles after detailed assessment	The study was conducted in accordance with the protocols proposals by IOBC. The exposure via overspray on egg-cards and parasitoid pupae does not correspond to an adequate route of exposure according to current guidelines for testing non-target-arthropods. Regarding the bioassay with adults exposed to dry residues the test design is moderately described; the mortality of parasitoids during exposure is unclear. However, the spray deposit is given. The assessment of the biological endpoints in not exactly reported; day of emergence of parasitoids is not given. As the biological data do not report results in values useful for the risk assessment, there is no analytical verification, and the study is non GLP, the study can be considered as supplementary only.			Y
M-813346-01-1	Effect of Pesticides on Biological Control Potential of Neoscona theisi (Araneae: Araneidae)	Tahir, Hafiz Muhammad (Reprint); Basheer, Tayyba; Ali, Shaukat Yaqoob, Rabia Naseem, Sajida Khan, Shafaat Yar	JOURNAL OF INSECT SCIENCE, (27 MAR 2019) Vol. 19, No. 2. ISSN: 1536-2442.	Category B, Relevant but supplementary articles after detailed assessment	Considered supplemental as ther approach used does not follow an approach recognised at EU level for use in risk assessment.			Y
M-813258-01-1	Do agrochemicals used during soybean flowering affect the visits of Apis mellifera L.?	Fagundez, G. A.; Blettler, D. C.; Krumrick, C. G.; Bertos, M. A.; Trujillo, C. G.	Spanish Journal of Agricultural Research (2016), Volume 14, Number 1, e0301 p., 40 refs. ISSN: 1695-971X DOI: 10.5424/sjar/2016141-7492 Published by: Spanish National Institute for Agricultural and Food Research and Technology (INIA), Madrid URL (Availabi	Category B, Relevant but supplementary articles after detailed assessment	Field level investigation where soybean are sprayed with glyphosate and the behaviour of bees is assessed. Findings not directly relateable to EU level risk assessment, as OTT crop application not on GAP - the observed effects are possible useful for the indirect effects discussion.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813429-01-1	Behavioral responses of honey bees (<i>Apis mellifera</i>) to natural and synthetic xenobiotics in food.	Liao Ling-Hsiu; Wu Wen-Yen; Berenbaum May R	Scientific reports, (2017 Nov 21) Vol. 7, No. 1, pp. 15924. Electronic Publication Date: 21 Nov 2017 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC5698444.	Category B, Relevant but supplementary articles after detailed assessment	Presented data based on preference behaviour of honey bees cannot be directly related to an EU level ecotox risk assessment - may possibly be used to support a lack of effects despite a preference.			
M-809253-01-1	Frequently encountered pesticides can cause multiple disorders in developing worker honey bees.	Tome Hudson V V; Schmehl Daniel R; Wedde Ashlyn E; Ellis James D; Godoy Raquel S M; Ravaiano Samira V; Martins Gustavo F; Guedes Raul N C	Environmental pollution (Barking, Essex : 1987), (2020 Jan) Vol. 256, pp. 113420. Electronic Publication Date: 11 Nov 2019 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The data presented are relevant to the wider discussion of the effects of glyphosate on pollinators, but as the rates were established for glyphosate used in the study were based on reported levels found in pollen and wax from another active substance, from an exposure perspective, they cannot be related to glyphosate.			
M-813322-01-1	Glyphosate affects the larval development of honey bees depending on the susceptibility of colonies	Vazquez, Diego E ; Natalia Ilina; Pagano, Eduardo A ; Zavala, Jorge A ; Walter M Farina	PLoS One, Vol. 13, No. 10, 20181001 E-ISSN: 1932-6203 DOI: 10.1371/journal.pone.0205074 Published by: Public Library of Science, San Francisco	Category B, Relevant but supplementary articles after detailed assessment	Endpoints presented are considered supplemental as the exposure system was not described, so cannot confirm what or how the bees were exposed.			Y
M-812238-01-1	The Herbicide Glyphosate Negatively Affects Midgut Bacterial Communities and Survival of Honey Bee during Larvae Reared in Vitro.	Dai Pingli; Ma Shilong; Yang Yang; Wang Qiang; Hou Chunsheng; Wu Yanyan; Liu Yongjun; Diao Qingyun; Yan Zhenxiong; Ma Shilong	Journal of agricultural and food chemistry, (2018 Jul 25) Vol. 66, No. 29, pp. 7786-7793. Electronic Publication Date: 11 Jul 2018 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Category B, Relevant but supplementary articles after detailed assessment	The bacterial communities in the mid-gut of bees were characterised. There was no gut bacterial analysis conducted on the positive control bees. Overall an increase in abundance and richness of bacterial taxa was observed at the highest exposure concentration. The implications of this was not discussed in the paper. Bacterial assemblages in the gut of honey bees is not relatable to an EU level ecotox risk assessment. The study is adequately described including specifications on the test item and test design. However, no regulatory endpoints were derived and there is no analytical verification of dose solutions.			Y
M-812304-01-1	Oral or Topical Exposure to Glyphosate in Herbicide Formulation Impacts the Gut Microbiota and Survival Rates of Honey Bees.	Motta Erick V S; Mak Myra; De Jong Tyler K; Powell J Elijah; O'Donnell Angela; Moran Nancy A; Suhr Kristin J; Riddington Ian M	Applied and environmental microbiology, (20200901) Vol. 86, No. 18. Electronic Publication Date: 1 Sep 2020 Journal code: 7605801. E-ISSN: 1098-5336. L-ISSN: 0099-2240. Report No.: PMC-PMC7480383.	Category B, Relevant but supplementary articles after detailed assessment	No proper endpoints are provided (only acute toxicity at 24h). The study does not alter existing risk assessment, but the findings of the work could serve to support the acute contact toxicity to bees and further sub-lethal effects of glyphosate (mortality) on honey bees as part of a broader discussion. Both laboratory and field experiments were conducted. The study is focused on the effects of glyphosate on bee gut microbiota. The glyphosate standard tested item is not fully described. No analytical verifications of the test item concentrations in the medium were conducted. Study is not compliant with any accepted guideline and therefore validity criteria cannot be assessed. Glyphosate was tested topically at different concentrations and only EC50 assessment (at 24 h instead of at 48 h as recommended by the guidance) was performed. A dose-response effect was observed in several parameters studied (not only mortality). For the field experiments, there is no security that the bees haven't been exposed to pesticides before the tests started. Findings cannot be related directly to impacts at the population level therefore influence on direct level and indirect assessment is uncertain. Nor is this a study type driven by data requirements. In addition, the tested formulation is not related to the representative formulation for the AIR5 (MON 52276).			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-809254-01-1	Mixtures of an insecticide, a fungicide and a herbicide	Almasri Hanine; Tavares	Ecotoxicology and environmental safety	Category B, Relevant but supplementary articles after detailed assessment	Provides information on the effects of glyphosate on the survival of honey bees (at 3 different concentrations after 20 days continuous oral exposure) but no risk assessment relevant endpoints are given. The study does not alter the existing risk assessment. Individual daily food consumption was not provided (it was calculated by dividing the food consumed per cage by the number of bees that remained alive each day in each cage. The same as suggested by the OECD TG 245). No Ecx assessment was conducted. The pesticide concentrations in the sugar solution were checked by GC-MS/MS but values were not reported in article. The test is not performed according to the OECD TG 245 chronic oral toxicity test (longer exposure) and therefore it is not possible to properly assess validity criteria (control mortality after 10 days). Whilst the study presents survival data, the test was conducted as an extended laboratory based study with a 20 day duration. This does not reflect an accepted test design used for Annex I renewal purposes. Despite 14 cages of 30 bees being for each exposure regimen, (cage design is not described), there are no standard error bars presented for the replication so the relevance of the proposed survival lines cannot be established from Figure 1, where survival in the glyphosate only groups, appears to be in the 80-90% up until day 12-15 and then at this point there appears also to be an effect in the control with survival dropping off sharply. A further point is that there is no positive control group for the DMSO used to enable dispersal of the substances. The influence of this on the overall toxicity is uncertain. Despite what appears to be a reliable test, there are some shortcomings in the test design.			
M-813500-01-1	Positive Correlation between Pesticide Consumption and Longevity in Solitary Bees: Are We Overlooking Fitness Trade-Offs?.	Strobl Verena; Camenzind Domenic; Minnameyer Angela; Walker Stephanie; Neumann Peter; Straub Lars Eyer Michael	Insects, (2020 Nov 20) Vol. 11, No. 11. Electronic Publication Date: 20 Nov 2020 Journal code: 101574235. ISSN: 2075-4450. L-ISSN: 2075-4450. Report No.: PMC-PMC7699727.	Category B, Relevant but supplementary articles after detailed assessment	Provides information on the survival of solitary bees after chronic exposure to glyphosate (at 1 single concentrations after 10 days continuous oral exposure) but no risk assessment relevant endpoints are given. The study does not alter existing risk assessment. Although the <i>Osmia bicornis</i> tested adults were obtained from cocoons reared in the laboratory, original individuals were transferred from organic orchards in Germany and previous pesticide exposure cannot be totally excluded. Measured parameters are not clearly described and there seems to be an error/typo in the glyphosate dose at which the bees were exposed. Sucrose solution consumption was recorded but no analytical verifications of the test item concentrations in the medium were conducted. No guidance document is available yet for lab studies with solitary bees. No ECx assessment was conducted for any of the parameters studied.			
M-808482-01-1	Assessment of lethal and sublethal effects of imidacloprid, ethion, and glyphosate on aversive conditioning, motility, and lifespan in honey bees (<i>Apis mellifera</i> L.).	Delkash-Roudsari Sahar Chicas-Mosier Ana M Goldansaz Seyed Hossein; Talebi-Jahromi Khalil; Ashouri Ahmad Abramson Charles I	Ecotoxicology and environmental safety, (2020 Nov) Vol. 204, pp. 111108. Electronic Publication Date: 12 Aug 2020 Journal code: 7805381. E-ISSN: 1090-2414. L-ISSN: 0147-6513.	Category B, Relevant but supplementary articles after detailed assessment	No endpoints are provided, the study does not alter the existing risk assessment but the findings of the work could serve to support the (low) chronic toxicity of glyphosate (sublethal effects) to honey bees as part of a broader discussion. The source of the test individuals is not clearly reported and the lack of a previous pesticide exposure cannot be excluded. The duration of the chronic study is not clear (bee lifespan) and there is no indication about the days the bees were exposed to the tested concentrations. Chronic dose metrics per bee cannot be precisely quantified. No analytical verifications of the test item concentrations in the chronic oral test were conducted. The test designs for the discrimination task and the rhythm, nicity monitoring are not recognisable for consideration at the EU level. In addition to glyphosate, RoundUp® Ready-to-Use Weed and Grass Killer was tested that cannot be related to the representative formulation for the glyphosate EU renewal (the representative formulation is MON 52276).			
M-812445-01-1	Effects of sublethal doses of glyphosate on honeybee navigation.	Balbuena Maria Sol; Farina Walter M Tison Lea; Hahn Marie-Luise; Greggers Uwe; Menzel Randolph	The Journal of experimental biology, (2015 Sep) Vol. 218, No. Pt 17, pp. 2799-805. Journal code: 0243705. E-ISSN: 1477-9145. L-ISSN: 0022-0949.	Category B, Relevant but supplementary articles after detailed assessment	Due to the foraging nature of bees in the natural environment in this study, the effects cannot be attributed to Glyphosate active substance alone. However, the impact of bees from other substances foraging during the homing flight is considered negligible as they were exposed to the test substance for 1 hour prior to release. It is still however a possibility and these data generated using this new experimental design, should be considered with a degree of caution. Furthermore, there is no clear indication of the dose of Glyphosate that the bees were exposed to as there was no analytical verification conducted in the study. This is a new experimental design and does not provide relevant endpoints for the regulatory risk assessment of Glyphosate Annex I renewal purposes. As there is no test guideline to which this study can be compared and as there is no data requirement nor approach to evaluate the findings of such a study at the regulatory level, the findings of this study should be considered with a degree of caution. The reliability assessment highlights that elements of the study may be considered reliable, but as there are no validity criteria against which this study can be assessed, nor data requirements relating to the achieved endpoints for Annex I renewal of plant protection products, the study must be considered non relevant for EU Annex I renewal purposes from an ecotoxicology risk assessment perspective.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812315-01-1	The pest-specific effects of glyphosate on functional response of a wolf spider.	Lacava Mariangeles Garcia Luis Fernando Viera Carmen Michalko Radek	Chemosphere, (2021 Jan) Vol. 262, pp. 127785. Electronic Publication Date: 7 Aug 2020 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	No endpoints are provided, the study does not alter the existing risk assessment but the findings of the work could serve to support the sub-lethal effects (on the feeding rate) of glyphosate on a ground-dwelling spider as part of a broader discussion. The test substance was identified only as 'Roundup'. The surfactant system in the formulated product used in this study was not confirmed by the author. It is therefore not possible to confirm whether the product used contained POEA or not. The tested individuals were collected from native forests from Uruguay and previous pesticide exposure cannot be excluded. The tested substance has not been fully identified. A tested rate is not provided (just that a glyphosate solution with a concentration of 280 mg/L a.i. was used). Tested individuals were exposed by contact for only 30 minutes. The experiment run in glass containers only for 4 hours, so only acute effects were assessed. Only one concentration was tested. The outcome of the study not only depends on the effects of glyphosate, but also on the tested prey (different results depending on the prey). The test is not conducted according to any guidance and therefore, it is not possible to confirm whether the study meets any validity criteria. In addition, the tested formulation is not fully identified.			
M-813455-01-1	Effects of a glyphosate-based herbicide on survival and oxidative status of a non-target herbivore, the Colorado potato beetle (<i>Leptinotarsa decemlineata</i>)	Rainio Miia J; Helander Marjo Margus Aigi; Lindstrom Leena Lehmann Philipp	Comparative biochemistry and physiology. Toxicology & pharmacology : CBP, (2019)100 Vol. 215, pp. 47-55. Electronic Publication Date: 11 Oct 2018 Journal code: 100959500. ISSN: 1532-0456. L-ISSN: 1532-0456.	Category B, Relevant but supplementary articles after detailed assessment	The material and methods part lack some important information. Newly hatched larvae from field collected beetles were used, but information on previous exposure to other chemicals or field history was not documented. Information on replicates, loading per replicate and test conditions were not reported. The preparation of the test solution was not specified. The test approach used does not follow a recognised test guideline and the rationale for the route of exposure and the dosing volumes used, is not described. The author indicates that a 100% Roundup Bio exposure in nature is unlikely to occur and that the high concentration mainly tests the physiological limits of the system and the antioxidant enzyme capacity of the beetles against the product. the exposure levels where significant effects were observed are unrealistic highlighting. There was no analytical verification, and the study was not performed according to GLP. Furthermore, endpoints based on biochemical analyses of larval homogenates cannot be applied in regulatory risk ecotoxicology assessment of non-target arthropods. Given the unrealistically high exposure levels used in the study, the non-guideline approach and the uncertainties as identified above, the study is considered as supplementary only.			Y
M-803560-01-1	Effect of pesticides on the reproductive output of <i>Eisenia fetida</i> .	Yasmin Shahla; Dsouza Doris	Bulletin of environmental contamination and toxicology, (2007 Nov) Vol. 79, No. 5, pp. 529-32. Electronic Publication Date: 21 Sep 2007	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			Y
M-813150-01-1	Pesticide application to agricultural fields: effects on the reproduction and avoidance behaviour of <i>Folsomia candida</i> and <i>Eisenia andrei</i> .	Santos M J G Ferreira M F L; Cachada A; Duarte A C; Sousa J P	Ecotoxicology (London, England), (2012 Nov) Vol. 21, No. 8, pp. 2113-22. Electronic Publication Date: 19 Jun 2012 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Category B, Relevant but supplementary articles after detailed assessment	The study is well described and performed according to ISO guidelines. Validity criteria were met, where relevant. Glyphosate did not seem to affect either earthworms or collembolans at the recommended field dose; therefore there were no endpoints presented in the paper, thus the study is considered supplementary only.			Y
M-813240-01-1	Toxicity of AMPA to the earthworm <i>Eisenia andrei</i> Bouche, 1972 in tropical artificial soil.	Dominguez Anahi; Bedano Jose Camilo Brown George Gardner Sautter Klaus Dieter; de Oliveira Cintia Mara Ribas; de Vasconcelos Eliane Carvalho; Bartz Marie Luise Carolina Niva Cintia Carla	Scientific reports, (2016 Jan 21) Vol. 6, pp. 19731. Electronic Publication Date: 21 Jan 2016 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: NLM-PMC4726205; PMC-PMC4726205.	Category B, Relevant but supplementary articles after detailed assessment	The aim of the study was to investigate acute and chronic toxicity of the glyphosate metabolite AMPA to earthworm <i>E. andrei</i> in tropical artificial soil. The study is well-documented and performed according to ISO guideline 11268-1 and 11268-2. However, the artificial soil used is not representative for the EU and soil characteristics are only given partly as information on CEC, organic carbon content and bulk density are missing. Additionally, one of the validity criteria for the chronic test was not met (the reported minimum number of control juveniles is too low). Endpoints (NOEC, LC50) were not derived and therefore this study delivers only supplementary information.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-761145-01-1	Acute and subchronic effects of three herbicides on biomarkers and reproduction in earthworm <i>Dendrobaena veneta</i> .	Hackenberger Davorka K; Stjepanovic Nikolina; Loncaric Zeljka Hackenberger Branimir K	Chemosphere, (2018 Oct) Vol. 208, pp. 722-730. Electronic Publication Date: 6 Jun 2018 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	The chronic test was performed according to OECD 222. However, the study was not conducted to GLP. Information on validity criteria are missing, and there is not analytical verification of soil concentrations. The unexpectedly high number of cocoons and the low number of juveniles being produced in the control group at the end of the study suggests that the quality of the worms going into the study may have been low. According to OECD 222, by the end of the test, the number of juveniles produced per adult worm should be > 30. In this case, with six adult worms per replicate there was a mean production (juveniles per worm) of 2.67 worms per adult. It is understood that the OECD 222 test guideline using a different species (<i>Eisenia fetida</i>) and not <i>Dendrobaena veneta</i> . It is relevant to consider juvenile production in the control as a check on the test system robustness. This cannot be confirmed in this case. Therefore, the study can be considered acceptable as supplementary information.			Y
M-813184-01-1	Herbicide toxicity to the California earthworms <i>Eisenia fetida</i> Sav. and <i>Dendrobaena veneta</i> Rosa	Jarmul-Pietraszczyk, Joanna; Jastrzebska, Aleksandra	Ecological Chemistry and Engineering A, (2012) Vol. 19, No. 9, pp. 1133-1137. CODEN: ECECBJ. ISSN: 1898-6188.	Category B, Relevant but supplementary articles after detailed assessment	This study compared the toxicity of three different commercially available formulations on the reproduction of earthworms, among them also a glyphosate containing product (Glifocyd 360 SL) without giving any further detail on active substance content, source and storage conditions. The study was not conducted according to a recognized test guideline nor under GLP. The origin of the earthworm species and their environmental holding conditions prior to and during the study have not been included. Information on the test soil characteristics is also missing and application of the test item to the soil is not described in detail. Sublethal and reproductive parameters of the control were reported, but information about control mortality is missing. In the chronic test only one test item concentration was tested, for the acute study this information is missing. The endpoint generated from this study is given in mg/L and it is not clear how it can be transferred to soil concentrations as the bulk density in the test system is unknown and the statistical analysis is not provided in detail. Therefore, the endpoint presented is considered unreliable.			Y
M-812277-01-1	Glyphosate but not Roundup® harms earthworms (<i>Eisenia fetida</i>).	Pochron Sharon Simon Leora; Mirza Ashra; Littleton Anne; Sahebzada Feisal; Yudell Michael	Chemosphere, (2020 Feb) Vol. 241, pp. 125017. Electronic Publication Date: 30 Sep 2019 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	The study was not conducted to GLP. The test design does not correspond to a current test guideline for earthworms focusing on reproduction parameters and there is no endpoint for risk assessment. Only a single dose level was used in the test, which is equivalent to 19.7 kg/ha, which is substantially higher than the maximum proposed application rate of glyphosate for the renewal. There was no analytical confirmation of levels tested, so exposure cannot be confirmed.			
M-813227-01-1	Glyphosate Sublethal Effects on the Population Dynamics of the Earthworm <i>Eisenia fetida</i> (Savigny, 1826)	Santadino, Marina; Coviella, Carlos; Momo, Fernando	Water, air, and soil pollution (2014), Volume 225, Number 12, 2207 p. ISSN: 0049-6979 Published by: Springer-Verlag Source Note: 2014 Dec., v. 225, no. 12	Category B, Relevant but supplementary articles after detailed assessment	The chronic laboratory study with <i>E. fetida</i> was not performed according to a guideline and thus, no validity criteria were given. Insufficient information is provided on the experimental design, as no information on the soil characteristics and the application of the test item is given. Only two test item treatment rates, without giving any rationale for choosing the higher dose, and a negative control were tested, but no positive control. No information on underlying raw data is given, i.e. number of control mortality, number of juveniles and cocoons etc. Finally, there are no quantifiable endpoints presented in the paper, considered applicable to an EU level ecotoxicological risk assessment for renewal purposes.			Y
M-812493-01-1	Effects of different concentrations of glyphosate (Roundup 360A®) on earthworms (<i>Octodrilus complanatus</i> , <i>Lumbricus terrestris</i> and <i>Aporrectodea caliginosa</i>) in vineyards in the North-East of Italy	Stellin, Fabio; Federico Gavinelli; Piergiorgio Stevanato; Giuseppe Concheri; Andrea Squartini; Maurizio Guido Paoletti	Applied soil ecology (2017) ISSN: 0929-1393 Published by: Elsevier B.V. Source Note: 2017,	Category B, Relevant but supplementary articles after detailed assessment	The study has not been conducted according to a recognized test guideline and there are no validity criteria presented. There is no information on the choice of test duration and the experimental design is not sufficiently described. A formulation was tested, but no information is given on the set-up of the spray solution, how application was done and at which volume. For the soil sampling, the time point of sampling is not stated and no information on storage conditions of the soil prior to use in the study is given. Additionally, information on the soil depth in the experimental test containers is not mentioned as well as no information on food as well as environmental conditions during the exposure period (e.g. temperature, soil moisture, light conditions) are available. Finally, there are no quantifiable endpoints presented in the paper.			Y

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813118-01-1	Effects of glyphosate and 2,4-D on earthworms (<i>Eisenia foetida</i>) in laboratory tests.	Correia F V Moreira J C	Bulletin of environmental contamination and toxicology, (2010 Sep) Vol. 85, No. 3, pp. 264-8. Electronic Publication Date: 24 Jul 2010 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Category B, Relevant but supplementary articles after detailed assessment	Study looks at the impact of GLY on earthworm reproduction. Conducted to relevant guideline. Technical GLY used, Brazilian soils used. Test concentrations from 1 to 1000 mg/kg in a 56 day study. Data is useful but no reliable endpoint to be used in the reg RA of GLY renewal.			Y
M-812349-01-1	Towards the development of an embryotoxicity bioassay with terrestrial snails: screening approach for cadmium and pesticides.	Druart Coline Scheiffler Renaud; de Vaufléury Annette	Journal of hazardous materials, (2010 Dec 15) Vol. 184, No. 1-3, pp. 26-33. Electronic Publication Date: 1 Aug 2010 Journal code: 9422688. E-ISSN: 1873-3336. L-ISSN: 0304-3894.	Category B, Relevant but supplementary articles after detailed assessment	GLY a.i. GLY products and other products used to compare toxicity to land snails. LC50 generated. But new method described not to any established guideline.			Y
M-813202-01-1	Exposure assessment to glyphosate of two species of annelids.	Garcia-Torres Tristan Giuffrè Lidia; Romaniuk Romina; Rios Ruth P; Pagano Eduardo A	Bulletin of environmental contamination and toxicology, (2014 Aug) Vol. 93, No. 2, pp. 209-14. Electronic Publication Date: 6 Jun 2014 Journal code: 0046021. E-ISSN: 1432-0800. L-ISSN: 0007-4861.	Category B, Relevant but supplementary articles after detailed assessment	Information may be used to support the lack of effects in earthworm studies.			Y
M-813148-01-1	Surface-functionalization effects on uptake of fluorescent polystyrene nanoparticles by model biofilms.	Nevius, Brian A.; Chen, Yung Pin; Decho, Alan W. (correspondence) Ferry, John L. Ferry, John L.; Decho, Alan W. (correspondence)	Ecotoxicology, (November 2012) Vol. 21, No. 8, pp. 2205-2213. Refs: 26 ISSN: 0963-9292; E-ISSN: 1573-3017 CODEN: ECOTEL	Category B, Relevant but supplementary articles after detailed assessment	This paper discusses the results of an earthworm avoidance study which is not an endpoint type used in EU level risk assessment for Annex I renewal. Therefore it is considered to be supplementary. No effects were observed for glyphosate exposure. Two other pesticides were included.			
M-813309-01-1	Minor effects of herbicides on microbial activity in agricultural soils are detected by N-transformation but not enzyme activity assays	Rose, Michael T; Ee Ling Ng; Lukas Van Zwieten; Rachel Wood; Terry J Rose; Zhe Han Weng	European journal of soil biology (2018), Volume 87, pp. 72-79 ISSN: 1164-5563 Published by: Elsevier Masson SAS Source Note: 2018 May, June, v. 87	Category B, Relevant but supplementary articles after detailed assessment	Non-EU soil but relevant endpoints demonstrating a lack of effects on soil microbial populations (n-trans) at field application rates.			
M-813252-01-1	Effects of different pesticides on virulence and mortality of some entomopathogenic nematodes.	Ulu, T. Can; Sadic, B.; Susurluk, I. A. [Reprint Author]	ISJ-Invertebrate Survival Journal, (2016) Vol. 13, pp. 111-115. http://www.isj.unimo.it/contents.htm . ISSN: 1824-307X.	Category B, Relevant but supplementary articles after detailed assessment	Nematode mortality and effects on virulence are not endpoints used in EU level ecotox risk assessment for Annex I renewal.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813365-01-1	Toxicity effects of glyphosate and metribuzin on five species of soil-dwelling predatory mites.	Alhewairini, S. S.	Pakistan Journal of Agricultural Sciences (2020), Volume 57, Number 5, pp. 1429-1435, 49 refs. ISSN: 0552-9034 DOI: 10.21162/PAKJAS/20.707 Published by: University of Agriculture, Faisalabad URL (Availability): https://pakjas.com.pk/papers/3262.pdf	Category B, Relevant but supplementary articles after detailed assessment	Provides information on the effects of glyphosate on the mortality of 5 soil-dwelling mite species, but other than that recommended in EU Reg. 283/2013 (Data requirements for AS). No relevant endpoints for the risk assessment are given. The study does not alter the existing risk assessment. No real dose was provided: 1.1L (glypho-48 or glyphosate as AS)/100L water, but it is unclear how many L of solution applied per ha? Individuals collected in the field with no information about those sites and previous exposures to pesticides. No clear information about maintenance of the mites previous to treatments in the laboratory. The experimental conditions (temperature and soil) are inadequately described and no validation data or analytical verifications are provided. No Ecx assessment was conducted. The test is not performed according to any OECD guideline.			
M-546976-01-1	Evaluation of Pesticide Toxicities with Differing Mechanisms Using <i>Caenorhabditis elegans</i> .	Ruan, Qin-Li; Ju, Jing-Juan; Li, Yun-Hui; Liu, Ran; Pu, Yue-Pu; Yin, Li-Hong; Wang, Da-Yong.	J. Toxicol. Environ. Health, Part A, Volume 72, Issue 11 and 12, Page 746-751, Publication Year 2009	Category B, Relevant but supplementary articles after detailed assessment	No endpoints (NOEC, LOEC, Ecx) are provided, but some findings of the work (generation time, brood size) could serve to investigate sub-lethal effects of glyphosate on non macro-soil organisms as part of a broader discussion.			Y
M-813481-01-1	Pesticide application inhibit the microbial carbonic anhydrase-mediated carbon sequestration in a soil microcosm.	Nathan V K; Jasna V; Parvathi A Nathan V K	Environmental science and pollution research international, (2019 Dec 12). Electronic Publication Date: 12 Dec 2019 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	Endpoints presented are not relevant to the direct effects assessment required for Annex I renewal. However, it does inform in other areas, e.g biodiversity / benefits of glyphosate use.			
M-813106-01-1	In vitro effect of N-(phosphonomethyl) glycine agrochemicals on total heterotrophic bacteria and azotobacter chroococcum.	Nunez, S. (correspondence); Ramirez, M.	Biocell, (2015) Vol. 39, Suppl. SUPPL. 1. Abstract Number: A71. Meeting Info: 32nd Annual Meeting Sociedad de Biologia de Cuyo. San Luis, Argentina. 04 Dec 2015-05 Dec 2015 ISSN: 0327-9545	Category B, Relevant but supplementary articles after detailed assessment	Endpoints based on the effects of glyphosate on bacteria in soil are not considered in the EU level ecotox risk assessment for Annex I renewal.			
M-813334-01-1	Evaluating the effect of monocrotophos and glyphosate on microbial population and certain important exoenzyme activities in soil.	Samal, S.; Sahoo, S.; Mishra, C. S. K. [Reprint Author]	Journal of Environmental Biology, (MAR 2019) Vol. 40, No. 2, pp. 226-234. http://www.jeb.co.in . CODEN: JEBIDP. ISSN: 0254-8704. E-ISSN: 0254-8704.	Category B, Relevant but supplementary articles after detailed assessment	Dosing information / purity of both active substances cannot be confirmed. Study not conducted according to a recognised guideline. Presented endpoints not relateable to an EU level risk assessment based on lack of soil characterisation.			Y
M-510106-01-1	An attempt to determine the resistance of microorganisms from triazine-contaminated soils to different herbicide groups.	Przybulewska, Krystyna; Taborska, Joanna.	Ecol. Chem. Eng. S, Volume 15, Issue 3, Page 359-374, Publication Year 2008	Category B, Relevant but supplementary articles after detailed assessment	No endpoints are provided. Although this publication provides information about effects of high concentrations of Roundup 360 SL formulation (representative EU formulation) in soil on micro-organisms, the results are shown only in form of graphs and no detailed results are presented. Therefore the results of the study are considered only as supportive/supplementary.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813283-01-1	Glyphosate Susceptibility of Different Life Stages of Three Fern Species	Aguilar-Dorantes, Karla; Esqueda-Esquivel, ValentA-n; Mata-Rosas, MartA-n; Mehltreter, Klaus; Vibrans, Heike	American fern journal (2015), Volume 105, Number 3, pp. 131-144 ISSN: 0002-8444 Published by: American Fern Society Source Note: 2015 July, v. 105, no. 3	Category B, Relevant but supplementary articles after detailed assessment	Considered supplementary as species not relateable to an EU level risk assessment for Annex I renewal.			
M-813181-01-1	Influence of soil organic matter on the sensitivity of selected wild and crop species to common herbicides.	Allison Jane E Boutin Celine; Carpenter David	Ecotoxicology (London, England), (2013 Oct) Vol. 22, No. 8, pp. 1289-302. Electronic Publication Date: 31 Aug 2013 Journal code: 9885956. E-ISSN: 1573-3017. L-ISSN: 0963-9292.	Category B, Relevant but supplementary articles after detailed assessment	Soils with a modified nutrient status were used which is not a requirement for the studies conducted to support Annex I renewal in the EU.			Y
M-813141-01-1	Effect of the herbicide glyphosate on the culturable fraction of glyphosate-tolerant maize rhizobacterial communities using two different growth media.	Barriuso Jorge Valverde Jose R; Mellado Rafael P	Microbes and environments, (2011) Vol. 26, No. 4, pp. 332-8. Electronic Publication Date: 9 Jul 2011 Journal code: 9710937. E-ISSN: 1347-4405. L-ISSN: 1342-6311.	Category B, Relevant but supplementary articles after detailed assessment	The study was a comparison between GLY and Harness GTZ (pre-emergence herbicide). GLY (Roundup plus) was applied at appropriate concentrations (360 g/kl, 0.72 kg/ha), the study looked at the rhizobacterial communities of glyphosate tolerance maize. The study was not to any relevant guideline and did not provide an endpoint relevant to the renewal of GLY.			
M-812394-01-1	Phytotoxicity of glyphosate soil residues re-mobilised by phosphate fertilisation	Bott, Sebastian; Tesfamariam, Tsehay; Kania, Angelika; Eman, Birceyudum; Aslan, Nergiz; Roemheld, Volker; Neumann, Guenter	Plant and soil (2011), Volume 342, Number 1-2, pp. 249-263 ISSN: 0032-079X Published by: Dordrecht : Springer Netherlands Source Note: 2011 May, v. 342, no. 1-2	Category B, Relevant but supplementary articles after detailed assessment	Roundup ultra max (360 g/L, applied up to 4.8 mg ae/kg soil), study looked at the impact of phosphate and glyphosate competition in the soil and consequential availability to NTTP and impact on soil characteristics (in different soil types) with the growth of soybean. AMPA is also considered in the article. However, a regulatory endpoint suitable for the renewal of GLY was not obtained from the article.			
M-813340-01-1	Plant Growth Responses of Apple and Pear Trees to Doses of Glyphosate	Carvalho, L B ; Duke, So ; Messa, J R ; Costa, Fr ; Bianco, S	Planta Daninha, Vol. 34, No. 4, pp. 815-822, 20161001 ISSN: 0100-8358 E-ISSN: 1806-9681 DOI: 10.1590/s0100-83582016340400022 Published by: Sociedade Brasileira da Ciencia das Plantas Daninhas, UFV - Depto de Fitotecnica, Jaboticabal	Category B, Relevant but supplementary articles after detailed assessment	Stdudy investigates the impact of spraying apple and pear saplings at rates up to 720 g/ha and looks at effects on yield. Spraying of sapling trees directly is not on the GAP table as a use, so whilst they may inform on the potential risk via drift, endpoint considered relevant to EU level risk assessment. The ndpoints were not established using a test guideline considered relevant to EU renewal.			
M-812498-01-1	Soilborne glyphosate residue thresholds for wheat seedling metabolite profiles and fungal root endophyte colonisation are lower than for biomass production in a sandy soil.	Claassens, A.; Rose, M. T.; Zwieter, L. van; Weng Zhe; Rose, T. J.; van Zwieter, L.; Weng, Z.	Plant and Soil (2019), Volume 438, Number 1/2, pp. 393-404, 64 refs. ISSN: 0032-079X DOI: 10.1007/s11104-019-04023-y Published by: Springer, Dordrecht URL (Availability): http://rd.springer.com/journal/11104	Category B, Relevant but supplementary articles after detailed assessment	Presented information informs on effects of glyphosate on seedling emergence and soil fungi, but no specific endpoints are presented that could be used for Annex I renewal ecotox risk assessment.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813482-01-1	Glyphosate residues in soil affect crop plant germination and growth.	Helander Marjo; Pauna Anna; Saloniemi Irma Helander Marjo; Pauna Anna; Saikkonen Kari; Saloniemi Irma	Scientific reports, (2019 Dec 23) Vol. 9, No. 1, pp. 19653. Electronic Publication Date: 23 Dec 2019 Journal code: 101563288. E-ISSN: 2045-2322. L-ISSN: 2045-2322. Report No.: PMC-PMC6927981.	Category B, Relevant but supplementary articles after detailed assessment	The study presents endpoints that may be considered relevant to a risk assessment, however, the test design does not reflect the seedling emergence study required as part of the data requirements.			
M-813167-01-1	Herbiciding Phragmites australis: effects on litter decomposition, microbial biomass, and macroinvertebrate communities.	Kennedy, Emmalisa; Leff, Laura G.; de Szalay, Ferenc A. [Reprint Author]	Fundamental and Applied Limnology, (MAY 2012) Vol. 180, No. 4, pp. 309-319. ISSN: 1863-9135. E-ISSN: 1863-9135.	Category B, Relevant but supplementary articles after detailed assessment	This paper provides information that is considered relevant to the biodiversity discussions.			
M-812179-01-1	Glyphosate effect on soil biochemical properties under conservation tillage	Panettieri, M; Lazaro, L; Lopez-Garrido, R; Murillo, J M; Madejon, E	Soil & tillage research (2013), Volume 133, pp. 16-24 ISSN: 0167-1987 Published by: Elsevier B.V. Source Note: 2013 Oct., v. 133	Category B, Relevant but supplementary articles after detailed assessment	The paper describes different tillage techniques following use of glyphosate and the impact on soil properties. Not relateable directly to risk assessment for renewal but useful in the biodiversity and benefits discussions.			
M-813126-01-1	Different Glyphosate Phytotoxicity of Seeds and Seedlings of Selected Plant Species.	Piotrowicz-Cieslak, Agnieszka I. [Reprint Author]; Adomas, Barbara; Michalczyk, Dariusz J.	Polish Journal of Environmental Studies, (2010) Vol. 19, No. 1, pp. 123-129. ISSN: 1230-1485.	Category B, Relevant but supplementary articles after detailed assessment	Study to compare the effect of GLY on plant growth parameters of 6 plant species.			Y
M-813579-01-1	Earthworm casts restrained the accumulation and phytotoxicity of soil glyphosate to cowpea (<i>Vigna unguiculata</i> (L.) Walp.) plants.	Jiang Lei; Yang Yi Pan Bo; Wang Bingjie Liang Jingqi Lin Yong	Chemosphere, (2021 Apr 14) Vol. 279, pp. 130571. Electronic Publication Date: 14 Apr 2021 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	The study primarily assesses the effects of earthworm casts on the accumulation and phytotoxicity of soil bound glyphosate to cowpea plants (<i>Vigna unguiculata</i>). However, the study also reports on the effects of glyphosate alone applied to soil at 12.15 m/kg on root and shoot length of <i>Vigna unguiculata</i> (in a sort of a seedling growth test). Although the test is not conducted according to any guidance, its results can be used as part of a broader discussion on the effects of glyphosate on non-target terrestrial plants.			
M-813155-01-1	Investigation of toxic effects of the glyphosate on <i>Allium cepa</i> .	Cavusoglu, K.; Yalcin, E.; Tuerkmen, Z.; Yapar, K.; Cavusoglu, K.; Cicek, F.	Tarım Bilimleri Dergisi (2011), Volume 17, Number 2, pp. 131-142, 44 refs. ISSN: 1300-7580 Published by: Ankara Üniversitesi Ziraat Fakültesi Adına, Ankara URL (Availability): http://tarimbilimleri.agri.ankara.edu.tr/2011/17_2/6_makale.pdf	Category B, Relevant but supplementary articles after detailed assessment	GLY products were used in the study. Impact on seed germination and root growth.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813191-01-1	Herbicidal action on germination, amylase activity and gibberellin level in <i>Cajanus cajan</i> (L.).	Jain Shrikant; Sashima Kumari; Jain, S.; Kumari, S.	Bioscience Discovery Journal (2012), Volume 3, Number 2, pp. 232-235, 12 refs. ISSN: 2231-024X Published by: Kaushalyaaie, Jalna URL (Availability): http://www.biosciencediscovery.com/Vol.%203%20No.%202/Jain%2087-90.pdf	Category B, Relevant but supplementary articles after detailed assessment	The study was not conducted to GLP and the test substance source and identity could not be verified. The study has not been conducted according to a recognized test guideline and there are no validity criteria presented. The authors state that Glyphosate affects the level of gibberellin and amylase activity, as well causing the food reserve content of seedlings to decrease gradually with an increase in concentrations. However, given the lack of standard guidelines, an unclear experimental design and approach, test substance and dose rates not sufficiently being reported as well as challenges in interpreting the study results, make reaching any reliable conclusions from the study quite challenging.			
M-813130-01-1	Evaluation of Roundup-induced toxicity on genetic material and on length growth of barley seedlings.	Truta Elena; Vochita Gabriela; Rosu Craita Maria; Zamfirache Maria-Magdalena; Olteanu Zenovia	Acta biologica Hungarica, (2011 Sep) Vol. 62, No. 3, pp. 290-301. Journal code: 8404358. ISSN: 0236-5383. L-ISSN: 0236-5383.	Category B, Relevant but supplementary articles after detailed assessment	Impact of GLY product on barley seedling development. Unclear how endpoint could be used in risk assessment.	Y	Y	
M-813360-01-1	Ecotoxicological Assessment of a Glyphosate-Based Herbicide in Cover Plants: <i>Medicago sativa</i> L. as a Model Species	Fernandes, Beatriz ; Soares, Cristiano ; Braga, Claudia ; Rebotim, Ana ; Ferreira, Rafael ; Ferreira, Joana ; Fidalgo, Fernanda ; Pereira, Ruth ; Cachada, Anabela	Applied Sciences, Vol. 10, No. 15, 20200101 E-ISSN: 2076-3417 DOI: 10.3390/app10155098 Published by: MDPI AG, Basel	Category B, Relevant but supplementary articles after detailed assessment	The study does not alter the existing risk assessment. All validity criteria according to OECD TG 208 cannot be evaluated. Test concentrations are not confirmed by analytical verifications. Only one tested species. In addition, the formulation tested is a potassium salt, whereas the AIR5 representative formulation MON 52276 contains an isopropylammonium salt.			
M-812509-01-1	Inhibition of wheat growth planted after glyphosate application to weeds.	Jang, Se Ji; Mallory-Smith, Carol; Kuk, Yong In [Reprint Author]	Weed Science, (JUL 2020) Vol. 68, No. 4, pp. 373-381. https://www.cambridge.org/core/journals/weed-science . CODEN: WEESA6. ISSN: 0043-1745. E-ISSN: 1550-2759.	Category B, Relevant but supplementary articles after detailed assessment	No endpoints are provided, the study does not alter the existing risk assessment but the findings of the work could serve to support the lack of effects of glyphosate fresh and aged residues (0, 1, 3, 5, and 7 days) after sowing wheat seeds in soils previously treated with glyphosate at 600 g ae/ha as part of a broader discussion. The formulation tested contains an ammonium salt, which has a substantially higher loading than the AIR5 representative formulation MON 52276 that contain isopropylammonium salt. The tested formulation is not fully identified. No analytical verifications of the test concentration in soil were conducted. OECD TG 208 was not followed and therefore validity criteria cannot be assessed. No emergence was investigated, only growth. No ECx assessment was conducted. The number of tested individuals is insufficient.			
M-812431-01-1	The effect of glyphosate on the growth and competitive effect of perennial grass species in semi-natural grasslands.	Damgaard Christian Strandberg Beate; Mathiassen Solvejg K; Kudsk Per	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2014) Vol. 49, No. 12, pp. 897-908. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Category B, Relevant but supplementary articles after detailed assessment	Not directly relevant to Ecotox risk assessment, but maybe used in biodiversity discussion.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-467897-01-2	Glyphosate and glufosinate-based herbicides: fate in soil, transfer to, and effects on land snails	Druart, Coline; Millet, Maurice; Scheifler, Renaud; Delhomme, Olivier; de Vaulfleur, Annette	Journal of soils and sediments JSS (2011), Volume 11, Number 8, pp. 1373-1384 ISSN: 1439-0108 Published by: Springer-Verlag Source Note: 2011 Dec., v. 11, no. 8	Category B, Relevant but supplementary articles after detailed assessment	The material and methods part lack some important information. The test design for the exposure of snails to treated food is not specified and thus the intake dose per snail is unclear. Furthermore, the application of the test solutions into the soil is not reported to demonstrate an even distribution. Nevertheless a chemical analysis of the soil during exposure was performed. As the biological data does not report results as an endpoint useful for the risk assessment, the study is not done to a guideline and is non-GLP and can be considered as supplementary only.			
著作権上提出不能	Effect of glyphosate on <i>Bacillus megaterium</i> with reference to tea ecosystem.	Emmanuel, L. D. A.; Maiyappan Sengodan; Arulmariathan, J. P.; Sengodan, M.	International Journal of Tea Science (IJTS) (2015), Volume 11, Number 3/4, pp. 16-22, 35 refs. ISSN: 0972-544X Published by: International Society of Tea Science, New Delhi URL (Availability): http://www.teascience.org/journals.htm	Category B, Relevant but supplementary articles after detailed assessment	Endpoints are not releateable to an EU ecotox risk assessment, but if reliable they may inform on discussions over community level effects in soil.			
M-812272-01-1	Reprotoxicity of glyphosate-based formulation in <i>Caenorhabditis elegans</i> is not due to the active ingredient only.	Jacques Mauricio Tavares Bornhorst Julia Soares Marcell Valandro Schwerdtle Tanja Garcia Solange Avila Daiana Silva	Environmental pollution (Barking, Essex : 1987), (2019 Sep) Vol. 252, No. Pt B, pp. 1854-1862. Electronic Publication Date: 27 Jun 2019 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The toxicity of glyphosate (glyphosate in monoisopropylamine salt) and its commercial formulation Termifin - Dexter Latina to the nematode <i>Caenorhabditis elegans</i> was investigated. Reproductive capacity was evaluated through brood size. The material and methods part lack some important information. The preparation of the test solutions and application of the test item are not described. Test concentrations, controls and loading per replicate are not specified and therefore not verifiable. Description of exposure throughout the study is also missing. The formulation used is not the representative formulation for Annex I renewal. Furthermore, no useful endpoint for the regulatory risk assessment of terrestrial organisms can be derived.			
M-813248-01-1	Evaluation of toxicity of agrochemicals on <i>Trichoderma</i> isolates in vitro.	Ranganathaswamy, M. [Reprint Author]; Patibanda, A. K.; Rao, G. Nageshwara	Journal of Biological Control, (DEC 2012) Vol. 26, No. 4, pp. 391-395. http://journalofbiologicalcontrol.com/ . ISSN: 0971-930X. E-ISSN: 0970-5732.	Category B, Relevant but supplementary articles after detailed assessment	The form of glyphosate used in the experiments cannot be confirmed. Fungal growth inhibition is not part of the specific ecotox risk assessment for the Annex I renewal.			
M-813546-01-1	Repeated annual application of glyphosate reduces the abundance and alters the community structure of soil culturable pseudomonads in a temperate grassland	Lorch, Melani; Agaras, Betina; Garcia-Parisi, Pablo; Druille, Magdalena; Omacini, Marina; Valverde, Claudio	Agriculture, ecosystems & environment (1 Oct 2021), Volume 319, pp. 107503 ISSN: 0167-8809 Source Note: 1 October 2021 v. 319	Category B, Relevant but supplementary articles after detailed assessment	The study does not provide an endpoint that can establish, modify or refine the risk assesment parameters (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on soil microorganisms. The part of the study conducted in the field is not relevant, because it was conducted in a humid mesophytic meadow of a commercial farm located in Argentina. This is not relatable to the EU risk assessment, because the conditions are not representative. The part of the study conducted in the greenhouse is relevant, but it was conducted at only one rate (the same for both pure glyphosate and the GBH). The concentration of glyphosate in the soil was not analyzed.			
M-813316-01-1	The effects of glyphosate, glufosinate, paraquat and paraquat-diquat on soil microbial activity and bacterial archaeal and nematode diversity	Dennis, Paul G.; Kukulies, Tegan; Forstner, Christian; Orton, Thomas G.; Pattison, Anthony B.	Scientific Reports (2018), 8(1), 1-9 CODEN: SRCEC3; ISSN: 2045-2322	Category B, Relevant but supplementary articles after detailed assessment	Nematode abundance is not an endpoint used in Ecotox risk assessment. However, these data are considered relevant to soil community effects based on single applications. Article is considered supplementary, as the approach used is not a recognised approach for Ecotox risk assessment.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813348-01-1	Evaluation of Glyphosate Levels in Sediments of Milky Stork Foraging Areas in Kuala Gula Bird Sanctuary, Perak, Malaysia.	Rahman, Faid; Ismail, Ahmad [Reprint Author]; Yusof, Shahrizad; Mazlan, Norida; Engku-Ahmad-Khairi, Engku-Arif	Pertanika Journal of Tropical Agricultural Science, (AUG 2019) Vol. 42, No. 3, pp. 995-1007. http://www.pertanika.upm.edu.my/journal_archives.php . ISSN: 1511-3701. E-ISSN: 2231-8542.	Category B, Relevant but supplementary articles after detailed assessment	Considered relevant but supplemental as this relates to biodiversity even though not from EU country.			
M-806895-01-1	Toxicity of glyphosate and ethoxysulfuron to the green microalgae (<i>Scenedesmus obliquus</i>).	Erms, U. B.; Demr, N.	Asian Journal of Chemistry (2009) , Volume 21, Number 3, pp. 2163-2169, 30 refs. ISSN: 0970-7077 Published by: Asian Journal of Chemistry, Sahibabad URL (Availability): http://www.asianjournalofchemistry.com	Category B, Relevant but supplementary articles after detailed assessment	Important methodological information is missing (analytical verification of concentrations, test item identification, test individuals and/or substrate source, etc.), so that the results can only be considered as supplementary information that cannot alter the existing risk assessment parameters.			Y
M-813551-01-1	Sublethal effect of glyphosate [N-(phosphonomethyl)glycine] on growth performance and biochemical activities in some organs of <i>Clarias gariepinus</i> (Burchell, 1822) fingerlings.	Akinbadewa, A. O.; Adewole, H. A.; Olaleye, V. F.; Ogundepo, G. E.	Agraarteadus (2020), Volume 31, Number 2, pp. 122-130, many ref. ISSN: 1024-0845 DOI: 10.15159/jas.20.16 Published by: Akadeemiline Pollumajanduse Selts, Tartu	Category B, Relevant but supplementary articles after detailed assessment	No regulatory relevant endpoints are provided, but the findings of the work could serve to support acute effects of glyphosate on fish (specifically <i>Clarias gariepinus</i>) as part of a broader discussion. Chronic effects were calculated at 70 days, which is not an agreed time frame for a test with fish juveniles, and therefore they are not useful for the RA (in fact, at 28 days no mortality at any tested rate was detected).			
M-813523-01-1	Effects of Glyphosate Herbicide on Physiological Parameters of Koi Carp, <i>Cyprinus Carpio</i> (Linnaeus, 1758) Fingerlings.	Sanudi, F. (correspondence); Indulkar, S.T.; Adsul, A.D.; Pawase, A.S.; Sawant, M.S. Sanudi, F. (correspondence)	Indian Journal of Animal Research, (March 2021) Vol. 55, No. 3, pp. 266-270. Refs: 21 ISSN: 0367-6722; E-ISSN: 0976-0555	Category B, Relevant but supplementary articles after detailed assessment	The study reports on chronic effects of glyphosate exposure to Koi carp (<i>Cyprinus Carpio</i>), incl. oxygen consumption rate, ammonia-nitrogen excretion rate, oxygen:nitrogen ratio and food consumption, over a duration of 28 days. The aforementioned parameters are not currently included in the context of an EU-level risk assessment. No ECx or NOEC values were reported (only a LOEC of 3.3. mg/L can be established). Therefore, the study can only be used as supplementary information.			
M-812261-01-1	Glyphosate-based herbicides and <i>Nosema</i> sp. microsporidia reduce honey bee (<i>Apis mellifera</i> L.) survivability under laboratory conditions	Faita, Marcia Regina (Reprint); Cardozo, Mayara Martins; Orth, Afonso Inacio; Nodari, Rubens Onofre Amandio, Dylan Thomas Telles Nodari, Rubens Onofre	JOURNAL OF APICULTURAL RESEARCH, (16 2020 APR 2020) . ISSN: 0021-8839.	Category B, Relevant but supplementary articles after detailed assessment	This is an acute oral toxicity test on bees performed according to the OECD 213. Collected bees in winter and spring were orally exposed to Roundup alone, <i>Nosema</i> spp. spores and a combination of both. 48-h survival after exposure to Glyphosate only (calculated as 0.08 µg a.s./bee, considering an average food consumption of 30 µL/bee) was above 95% for both winter and spring collected bees. Mortality increased when exposed to the mixture with <i>Nosema</i> spp. spores. One single glyphosate concentration and a control was tested. The study is published in a SCI peer-reviewed journal and provides relevant toxicological information on the acute oral risk to bees but no endpoints are given. The article seems to be reliable with restrictions as no RF test conducted, no positive control was used, performance of hive was not reported. In addition, RNA profiling not used as an endpoint is EU Annex I renewal ecotox risk assessment and the outcome of the study is not very useful for the risk assessment because the tested rate is sub-lethal.			
M-813531-01-1	Sublethal doses of glyphosate impair olfactory memory retention, but not learning in the honey bee (<i>Apis mellifera</i> scutellata)	Hernandez, Juan (Reprint); Amaya-Marquez, Marisol Riveros, Andre J.	JOURNAL OF INSECT CONSERVATION, (2021 AUG 2021) Vol. 25, No. 4, pp. 683-694. ISSN: 1366-638X.	Category B, Relevant but supplementary articles after detailed assessment	The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for bees (it cannot be integrated into the risk assessment scheme), but its findings can be used as supportive information (olfactory learning and memory) in a broader discussion on the sub-lethal effects of glyphosate on bees.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813249-01-1	Toxicity of some commonly used insecticides/herbicides on <i>Zygogramma bicolorata</i> Pallister (Coleoptera: Chrysomelidae).	Siddhapara, M. R. [Reprint Author]; Patel, M. B.; Patel, H. V.; Dumaniya, S. G.	Journal of Biological Control, (SEP 2012) Vol. 26, No. 3, pp. 251-254. http://journalofbiologicalcontrol.com/ . ISSN: 0971-930X. E-ISSN: 0970-5732.	Category B, Relevant but supplementary articles after detailed assessment	The source of the beetles used was not adequately described. The source and purity of the glyphosate test substance was not described, with no purity information and therefore unable to confirm the exposure concentrations used in the test. There was insufficient description of the test system to enable comparison with existing test guidelines to establish acceptability of the approach used. There was not analytical verification of the exposure concentrations. No endpoint can be derived by the study. The study is considered as supplementary only.			
M-803566-01-1	Effects of glyphosate on rhizosphere soil microbial communities under two different plant compositions by cultivation-dependent and -independent methodologies	Mijangos, Iker; Becerril Jose M; Albizu, Isabel; Epelde, Lur; Garbisu, Carlos	Soil biology and biochemistry (2009), Volume 41, Number 3, pp. 505-513 ISSN: 0038-0717 Source Note: 2009 Mar., v. 41, issue 3	Category B, Relevant but supplementary articles after detailed assessment	The article still shows significant effects compared to the control at the lowest tested rate under some of the tested scenarios, so no clear endpoint from this study can be used for the risk assessment. In addition, glyphosate effect is not the only and single tested variable. Results are considered as only supportive.			
M-813538-01-1	Microbiological Nitrogen Transformations in Soil Treated with Pesticides and Their Impact on Soil Greenhouse Gas Emissions	Jezierska-Tys, Stefania (Reprint); Joniec, Jolanta; Bednarz, Joanna; Kwiatkowska, Edyta	AGRICULTURE-BASEL, (2021 AUG 2021) Vol. 11, No. 8.	Category B, Relevant but supplementary articles after detailed assessment	The study does not provide an endpoint that can establish, modify or refine the risk assessment parameters for soil microorganisms (it cannot be integrated into the risk assessment scheme), but its findings can be used as higher tier supportive information in a broader discussion of the effects of glyphosate on soil nitrogen transformation (nitrification) under realistic field conditions.			
M-813570-01-1	Effects of glyphosate spray-drift on plant flowering.	Strandberg B; Sorensen P B; Bruus M; Dupont Y L Bossi R Link M Damgaard C F	Environmental pollution (Barking, Essex : 1987), (2021 Mar 23) Vol. 280, pp. 116953. Electronic Publication Date: 23 Mar 2021 Journal code: 8804476, E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category B, Relevant but supplementary articles after detailed assessment	The study reports on spray-drift exposure of non-target plants to the glyphosate formulation Roundup Bio; 360 g a.i./L using tractor-mounted spray-drift reducing nozzles and effects on plant cover and flowering. While spray drift exposure is of relevance for the non-target plants (off-field) risk assessment, the effects assessed in this study (flowering and plant cover) are not currently taken into account in the context of an EU-level risk assessment. However, the study could be used in the context of a broader discussion regarding mitigation measures for the reduction of spray-drift exposure to non-target plants.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813539-01-1	protective effects of melatonin on survival, immune response, digestive enzymes activities and intestinal microbiota diversity in Chinese mitten crab (<i>Eriocheir sinensis</i>) exposed to glyphosate	Song, Yameng; Song, Xiaozhe; Wu, Mengyao; Pang, Yangyang; Shi, Aoya; Shi, Xingliang; Niu, Chao; Cheng, Yongxu; Yang, Xiaozhen	Comparative biochemistry and physiology: CBP (Dec 2020), Volume 238, pp. 108845 ISSN: 1532-0456 Source Note: December 2020 v. 238	Category C, articles of unclear relevance after detailed assessment	The only information from this study that is relevant for the risk assessment is the effect of glyphosate on survival rate. The rest of the investigated parameters are all based on findings at cellular/mollecular level and therefore not relevant. Glyphosate has been tested at only one concentration (48.945 mg/L) and this concentrations was calculated as the 96 h LC50 value in a previous study. Mortality in this study at that concentration is lower than 50%, but still the relevance of the findings of this study for the risk assessment is not clear. In addition, the test item was not identified (not clear whether it is active substance or a product -and which kind of formulation.)			
M-813472-01-1	Effects of the glyphosate-based herbicide roundup on the survival, immune response, digestive activities and gut microbiota of the Chinese mitten crab, <i>Eriocheir sinensis</i>	Yang Xiaozhen; Song Yameng; Zhang Cong; Pang Yangyang; Song Xiaozhe; Wu Mengyao Cheng Yongxu	Aquatic toxicology (Amsterdam, Netherlands), (2019 Sep) Vol. 214, pp. 105243. Electronic Publication Date: 9 Jul 2019 Journal code: 8500246. E-ISSN: 1879-1514. L-ISSN: 0166-445X.	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear. This study uses a high dose of roundup formulation. The surfactants in Roundup are known to be toxic to aquatic animals. This publication indicate potentially a significant decline in survival due to Roundup. Therefore, logically results obtained for other endpoints beyond survival may be secondary to known toxicity of the surfactants.			Y
M-813465-01-1	Glyphosate, but not its metabolite AMPA, alters the honeybee gut microbiota	Blot Nicolas; Veillat Lois; Rouze Regis Delatte Helene	PloS one, (2019) Vol. 14, No. 4, pp. e0215466. Electronic Publication Date: 16 Apr 2019 Journal code: 101285081. E-ISSN: 1932-6203. L-ISSN: 1932-6203. Report No.: PMC-PMC6467416.	Category C, articles of unclear relevance after detailed assessment	The investigation of potential effects on the gut microbiome of ruminants is not a data requirement for the approval of pesticides and suitable test protocols to assess these effects are not specified in the form of official guidance documents. Therefore, the relevance of the publication is unclear.			Y
M-812244-01-1	Glyphosate perturbs the gut microbiota of honey bees.	Motta Erick V S; Raymann Kasie; Moran Nancy A	Proceedings of the National Academy of Sciences of the United States of America, (20181009) Vol. 115, No. 41, pp. 10305-10310. Electronic Publication Date: 24 Sep 2018 Journal code: 7505876. E-ISSN: 1091-6490. L-ISSN: 0027-8424. Report No.: PMC-PMC618712	Category C, articles of unclear relevance after detailed assessment	Potential effects on gut microbes are not part of the risk assessments and suitable scientific approaches to assess these effects are not specified, thus relevance of these effects remained unclear.			Y
M-813377-01-1	Impact of glyphosate on the honey bee gut microbiota: effects of intensity, duration, and timing of exposure	Motta, Erick V. S.; Morana, Nancy A.	mSystems, (2020) Vol. 5, No. 4, pp. e00268. CODEN: MSYSBR. ISSN: 2379-5077.	Category C, articles of unclear relevance after detailed assessment	No endpoints are provided. Although this publication provides information about chronic impacts of glyphosate on bacteria that may be relevant at some level, it is uncertain without further guidance, how these data can be related to the EU level regulatory risk assessment (as the methods used are unrecognised) and how to interpret the data within the context of a renewal. Due to these uncertainties it has to be considered Category C with the uncertainties being the restrictions. The glyphosate formulation is not fully described. No analytical verifications of the test item concentrations in the medium were conducted. Study is not compliant with any accepted guideline and therefore validity criteria cannot be assessed. Although glyphosate was tested at different concentrations and a dose-response effect was observed in several parameters studied, no ECx assessment was performed.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-807419-01-1	Effect of various pesticides on the non-target species <i>Microctonus hyperodae</i> , a biological control agent of <i>Listronotus bonariensis</i> .	Addison, P. J.; Barker, G. M.	Entomologia Experimentalis et Applicata (2006) Volume 119, Number 1, pp. 71-79, 40 refs. ISSN: 0013-8703 DOI: 10.1111/j.1570-7458.2006.00392.x Published by: Blackwell Publishing, Oxford	Category C, articles of unclear relevance after detailed assessment	Study provides information on effects of a Roundup formulation on the parasitoid wasp <i>Microctonus hyperodae</i> . As the exposure situation in the test (exposure via shaking in test solution) is not comparable to the field situation (overspray or exposure to residues) and study conditions are not mentioned the relevance of the study cannot be clearly determined.			Y
M-813542-01-1	Individual and combined toxic effects of herbicides on growth parameters and fecundity of <i>Eisenia fetida</i>	Anshu, Singh, Dharambir; Mahima; Shweta	International Journal of Current Microbiology and Applied Sciences, (2020) Vol. 9, No. 12, pp. 1997-2005. CODEN: IJCMO9. ISSN: 2319-7706.	Category C, articles of unclear relevance after detailed assessment	No regulatory relevant endpoints are provided. In addition, results at 30, 60 and 90 days were provided, when the accepted time frame is 28 days (mortality and growth) and 56 days (reproduction) for <i>Eisenia fetida</i> . Earthworms were exposed to the test item all along the study period (90 days), while the agreed regulatory exposure period is of only 28 days (earthworms should have been removed after that). Therefore, the conclusions of the study are not comparable to any accepted regulatory endpoint.			
M-813548-01-1	Effects of glyphosate-based herbicides and their active ingredients on earthworms, water infiltration and glyphosate leaching are influenced by soil properties	Zaller, Johann G.; Weber, Maureen; Maderthaner, Michael; Gruber, Edith; Takacs, Eszter; Moertl, Maria; Klatyik, Szandra; Gyori, Janos; Roembke, Joerg; et al.	Environmental Sciences Europe, (2021) Vol. 33, No. 1, pp. 51. CODEN: ESENCT. ISSN: 2190-4715.	Category C, articles of unclear relevance after detailed assessment	This is a greenhouse experiment where established weed populations of common amaranth (<i>Amaranthus retroflexus</i>) were sprayed with three glyphosate-based herbicides GBHs (Roundup LB Plus, Roundup PowerFlex, Touchdown Quattro) and their corresponding AIs (salts of glyphosate isopropylammonium, potassium, diammonium) to examine their effects on the activity and physiological biomarkers of the earthworm species <i>Lumbriculus terrestris</i> . The route of exposure to earthworms (herbicides were sprayed to the plants and not to the soil) is not in line with the EU process and therefore, no reliable endpoint can be established as no direct effects were assessed. Moreover, some of the studied variables are based on a cellular or molecular level and the only information that could be integrated in the EU evaluation is related to the variation in the density and activity of the earthworms 4 weeks after weed control applications. In addition, final conclusions were expressed in terms of GBH or AI and not for every single treatment. Nevertheless, weeds were treated at recommended dosages just as they would be applied to kill weeds before sowing, so the study somehow mimics what really happens to earthworms living in the soil when exposed to glyphosate residues after the weeds in a field are treated before sowing the crop. The soil is natural and glyphosate concentrations in soil and leachate were measured, so the real exposure to earthworms 26 days after GBH/AI applications is known. This study could be relevant to assess Biodiversity.			
M-813550-01-1	Influence of herbicides, insecticides and fungicides on food consumption and body weight of <i>Rossius kessleri</i> (Diplopoda, Julidae).	Kozak, V. M.; Romanenko, E. R.; Brygadyrenko, V. V.	Biosystems Diversity (2020), Volume 28, Number 3, pp. 272-280, 37 refs. ISSN: 2519-8513 DOI: 10.15421/012036 Published by: Oles Honchar Dnipropetrovsk National University, Dnipropetrovsk URL (Availability): http://ecology.dp.ua/index.php/ECO/article/view/1055/1010	Category C, articles of unclear relevance after detailed assessment	The study assesses the effects of a glyphosate formulation (Roundup, 450 g/L, IPA salt) on body weight, food consumption and production of feces of <i>Rossius kessleri</i> , a millipede (Diplopoda, Julidae), over a duration of 20 days. No endpoints relevant to the risk assessment were reported, as no reproduction effects were investigated. While soil-dwelling organisms are relevant for the EU level risk assessment, the species <i>Rossius kessleri</i> is not commonly used as a representative species for soil organisms. Furthermore, the described test system is not in accordance with the standardized test systems for soil organisms, as no soil was included in the test system, only dried litter. In addition, the test organisms were collected in the wild from a not specified source ("near an airport"), so previous contaminant exposure can not be ruled out.			

別添資料 2-4

適合性評価の第 2 段階で「区分 a」「区分 b」「区分 c」へ分類された文献リスト
及びその理由

(環境動態、E-fate)

区分 a リスト		1～ 21 頁
区分 b リスト		22～37 頁
区分 c リスト		該当無し

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812271-01-1	Degradation of glyphosate and bioavailability of phosphorus derived from glyphosate in a soil-water system	Sun Mingjing; Li Hui Jaisi Deb P	Water research, (2019 Oct 15) Vol. 163, pp. 114840. Electronic Publication Date: 4 Jul 2019 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812161-01-1	Assessment of pesticide inputs into surface waters by agricultural and urban sources - A case study in the Querne/Weida catchment, central Germany.	Tauchnitz Nadine Kurzius Florian Rupp Holger; Meissner Ralph Schmidt Gerd Hauser Barbara Schrodter Matthias	Environmental pollution (Barking, Essex : 1987), (2020 Dec) Vol. 267, pp. 115186. Electronic Publication Date: 11 Jul 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813306-01-1	Effect of Biochar Amendment and Ageing on Adsorption and Degradation of Two Herbicides.	Zhelezova Alena Zhelezova Alena Cederlund Harald; Stenstrom John	Water, air, and soil pollution, (2017) Vol. 228, No. 6, pp. 216. Electronic Publication Date: 25 May 2017 Journal code: 0312676. ISSN: 0049-6979. L-ISSN: 0049-6979. Report No.: PMC-PMC5443863.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813239-01-1	Fate of glyphosate and degradates in cover crop residues and underlying soil: A laboratory study.	Cassigneul A Benoit P; Bergheaud V; Dumeny V; Etievant V Goubard Y Maylin A; Alletto L Justes E	The Science of the total environment, (2016 Mar 01) Vol. 545-546, pp. 582-90. Electronic Publication Date: 4 Jan 2016 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813225-01-1	Can Simple Soil Parameters Explain Field-Scale Variations in Glyphosate-, Bromoxyniloctanoate-, Diflufenican-, and Bentazone Mineralization?	Norgaard, Trine; de Jonge, Lis W; Moldrup, Per; Olsen, Preben; Johnsen, Anders R	Water, air, and soil pollution (2015), Volume 226, Number 8, 262 p. ISSN: 0049-6979 Published by: Springer International Publishing Source Note: 2015 Aug., v. 226, no. 8	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812433-01-1	Effect of soil aeration and phosphate addition on the microbial bioavailability of carbon-14-glyphosate.	Kanissery Ramdas G; Welsh Allana; Sims Gerald K	Journal of environmental quality, (2015 Jan) Vol. 44, No. 1, pp. 137-44. Journal code: 0330666. ISSN: 0047-2425. L-ISSN: 0047-2425.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812434-01-1	Carbon-14-glyphosate behavior in relationship to pedoclimatic conditions and crop sequence.	Rampoldi E Ariel; Hang Susana; Barriuso Enrique	Journal of environmental quality, (2014 Mar) Vol. 43, No. 2, pp. 558-67. Journal code: 0330666. ISSN: 0047-2425. L-ISSN: 0047-2425.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813208-01-1	Behavior of the non-selective herbicide glyphosate in agricultural soil.	Al-Rajab, A. J.; Hakami, O. M.	American Journal of Environmental Sciences (2014), Volume 10, Number 2, pp. 94-101, 30 refs. ISSN: 1553-345X DOI: 10.3844/ajessp.2014.94.101 Published by: Science Publications, New York URL (Availability): http://thescipub.com/abstract/10.3844/ajessp.2014	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813709-01-1	Soil properties governing biodegradation of the herbicide glyphosate in agricultural soils.	Nghia Nguyen Khoi; Doerfler, U.; Suhadolc, M.; Gerhard, W.; Munch, J. C.; Schroll, R. Editor(s): Bakar, B. H.; Kurniadie, D.; Tjitrosoedirdjo, S.	The role of weed science in supporting food security by 2020. Proceedings of the 24th Asian-Pacific Weed Science Society Conference, Bandung, Indonesia, October 22-25, 2013 (2013), pp. 312-324, 33 refs. ISBN: 978-602-96519-2-8 Published by: Weed Science S	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812439-01-1	Laboratory and Lysimeter Studies of Glyphosate and Aminomethylphosphonic Acid in a Sand and a Clay Soil	Bergstrom, Lars; Borjesson, Elisabet; Stenstrom, John	Journal of environmental quality (2011), Volume 40, Number 1, pp. 98-108 ISSN: 1537-2537 Published by: American Society of Agronomy, Crop Science Society of America, Soil Science Society Source Note: 2011 Jan., v. 40, no. 1	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812352-01-1	Measurements and modeling of pesticide persistence in soil at the catchment scale.	Ghafoor A Jarvis N J; Thierfelder T; Stenstrom J	The Science of the total environment, (2011 Apr 15) Vol. 409, No. 10, pp. 1900-8. Electronic Publication Date: 24 Feb 2011 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812169-01-1	Studies on the biodegradation capacity of C-14-labelled glyphosate in vine plantation soils.	Alexa, Ersilia [Reprint Author]; Sumalan, Renata; Negrea, Monica; Bragea, Mihaela; Poiana, Mariana-Atena; Radulov, Isidora; Lazureanu, Aurel	Journal of Food Agriculture & Environment, (JUL-OCT 2010) Vol. 8, No. 3-4, Part 2, pp. 1193-1198. ISSN: 1459-0255.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813129-01-1	Degradation of 14C-glyphosate and aminomethylphosphonic acid (AMPA) in three agricultural soils.	Al-Rajab Abdul Jabbar Schiavon Michel	Journal of environmental sciences (China), (2010) Vol. 22, No. 9, pp. 1374-80. Journal code: 100967627. ISSN: 1001-0742. L-ISSN: 1001-0742.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813176-01-1	Dynamics and mitigation of six pesticides in a "Wet" forest buffer zone.	Passeport Elodie Richard Benjamin; Chaumont Cedric; Margoum Christelle; Liger Lucie; Gril Jean-Joel; Tournebize Julien	Environmental science and pollution research international, (2014 Apr) Vol. 21, No. 7, pp. 4883-94. Electronic Publication Date: 27 Apr 2013 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813288-01-1	Influence of soil tillage and erosion on the dispersion of glyphosate and aminomethylphosphonic acid in agricultural soils	Todorovic, Gorana Rampazzo; Alexander Eder; Axel Mentler; Nicola Rampazzo; Peter Strauss; Winfried E H Blum	International agrophysics (2014), Volume 28, Number 1, pp. 93-100 Published by: De Gruyter Open Source Note: 2014 Feb. 13, v. 28, no. 1	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812251-01-1	Soil Domain and Liquid Manure Affect Pesticide Sorption in Macroporous Clay Till.	Albers Christian Nyrop; Ernstsen Vibeke; Johnsen Anders Risbjerg	Journal of environmental quality, (20190100) Vol. 48, No. 1, pp. 147-155. Journal code: 0330666. ISSN: 0047-2425. L-ISSN: 0047-2425.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812484-01-1	Contrasting soil property patterns between ditch bed and neighbouring field profiles evidence the need of specific approaches when assessing water and pesticide fate in farmed landscapes	Dollinger, Jeanne; Dages, Cecile; Samouelian, Anatja; Coulouma, Guillaume; Lanoix, Marthe; Blanca, Yves; Voltz, Marc	Geoderma, (2018) Vol. 309, pp. 50-59. CODEN: GEDMAB. ISSN: 0016-7061.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813277-01-1	Adsorption behaviors of glyphosate, glufosinate, aminomethylphosphonic acid, and 2-aminoethylphosphonic acid on three typical Baltic Sea sediments.	Skeff, Wael [Reprint Author]; Recknagel, Constantin; Duewel, Yvonne; Schulz-Bull, Detlef E.	Marine Chemistry, (JAN 20 2018) Vol. 198, pp. 1-9. http://www.journals.elsevier.com/marine-chemistry/#description . CODEN: MRCHBD. ISSN: 0304-4203. E-ISSN: 1872-7581.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812207-01-1	Sorption and desorption of glyphosate in Mollisols and Ultisols soils of Argentina.	Gomez Ortiz Ana Maria; Okada Elena; Costa Jose Luis; Bedmar Francisco	Environmental toxicology and chemistry, (20171000) Vol. 36, No. 10, pp. 2587-2592. Electronic Publication Date: 13 Sep 2017 Journal code: 8308958. E-ISSN: 1552-8618. L-ISSN: 0730-7268.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812217-01-1	Sorption and desorption of glyphosate, MCPA and tetracycline and their mixtures in soil as influenced by phosphate.	Munira Sirajum; Farenhorst Annemieke	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2017 Dec 02) Vol. 52, No. 12, pp. 887-895. Electronic Publication Date: 29 Sep 2017 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812495-01-1	Phosphate and glyphosate sorption in soils following long-term phosphate applications	Munira, Sirajum; Annemieke Farenhorst; Wole Akinremi	Geoderma (2017) ISSN: 0016-7061 Published by: Elsevier B.V. Source Note: 2017,	Category A, Relevant & reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812454-01-1	Phosphate fertilizer impacts on glyphosate sorption by soil.	Munira Sirajum Farenhorst Annemieke; Flaten Don Grant Cynthia	Chemosphere, (2016 Jun) Vol. 153, pp. 471-7. Electronic Publication Date: 29 Mar 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813236-01-1	Glyphosate and AMPA adsorption in soils: laboratory experiments and pedotransfer rules.	Sidoli Pauline; Baran Nicole Sidoli Pauline; Angulo-Jaramillo Rafael	Environmental science and pollution research international, (2016 Mar) Vol. 23, No. 6, pp. 5733-42. Electronic Publication Date: 19 Nov 2015 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813256-01-1	Glyphosate sorption to soils and sediments predicted by pedotransfer functions	Dollinger, Jeanne; Dages, Cecile; Voltz, Marc	Environmental chemistry letters (2015), Volume 13, Number 3, pp. 293-307 ISSN: 1610-3653 Published by: Springer International Publishing Source Note: 2015 Sept., v. 13, no. 3	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-808790-01-1	pH dependence of Glyphosate adsorption on soil horizons	Tevez, Hector R. dos Santos Afonso, Maria (Reprint)	BOLETIN DE LA SOCIEDAD GEOLOGICA MEXICANA, (2015) Vol. 67, No. 3, pp. 509-516. ISSN: 1405-3322.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813228-01-1	Fate and mobility of glyphosate leachate in palestinian soil using soil column	Jodeh, S.; Attallah, M.; Haddad, M.; Hadda, T. B.; Salghi, R.; Jodeh, D.; Warad, I.	Journal of Materials and Environmental Science, (2014) Vol. 5, No. 6, pp. 2008-2016, 9 pp.. CODEN: JMESC. ISSN: 2028-2508.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812422-01-1	Kinetics of Glyphosate Desorption from Mobilized Soil Particles	Gjettermann, B; Petersen, C T; Hansen, S; Koch, C Bender; Styczen, M	Soil Science Society of America journal (2011), Volume 75, Number 2, pp. 434-443 ISSN: 1435-0661 Published by: Soil Science Society Source Note: 2011 Mar., v. 75, no. 2	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812186-01-1	Evaluation of Sampling Strategies for Pesticides in a Macroporous Sandy Loam Soil	Gjettermann, B; Styczen, M; Koch, C B; Hansen, S; Petersen, C T	Soil & sediment contamination (2011), Volume 20, Number 5-8, pp. 986-994 ISSN: 1058-8337 Source Note: 2011, v. 20, no. 5-8	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813484-01-1	Leaching and degradation of (13)C2-(15)N-glyphosate in field lysimeters.	Gros Peter; Leinweber Peter Meissner Ralph; Rupp Holger Wirth Marisa A; Kanwischer Marion; Schulz-Bull Detlef E	Environmental monitoring and assessment, (2020 Jan 21) Vol. 192, No. 2, pp. 127. Electronic Publication Date: 21 Jan 2020 Journal code: 8508350. E-ISSN: 1573-2959. L-ISSN: 0167-6369. Report No.: PMC-PMC6970956.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812306-01-1	Leaching of herbicidal residues from gravel surfaces - A lysimeter-based study comparing gravels with agricultural topsoil.	Albers Christian Nyrop Jacobsen Ole Stig Bester Kai; Jacobsen Carsten Suhr; Carvalho Pedro N	Environmental pollution (Barking, Essex : 1987), (2020 Nov) Vol. 266, No. Pt 3, pp. 115225. Electronic Publication Date: 16 Jul 2020 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812446-01-1	Leaching of Glyphosate and Aminomethylphosphonic Acid through Silty Clay Soil Columns under Outdoor Conditions.	Napoli Marco; Cecchi Stefano; Zanchi Camillo A; Orlandini Simone	Journal of environmental quality, (2015 Sep) Vol. 44, No. 5, pp. 1667-73. Journal code: 0330666. ISSN: 0047-2425. L-ISSN: 0047-2425.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812391-01-1	Spatial variation in herbicide leaching from a marine clay soil via subsurface drains.	Ulen Barbro M Larsbo Mats; Kreuger Jenny K; Svanback Annika	Pest management science, (2014 Mar) Vol. 70, No. 3, pp. 405-14. Electronic Publication Date: 13 Jun 2013 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X. Report No.: NLM-PMC4238832; PMC-PMC4238832.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812441-01-1	Particulate-facilitated leaching of glyphosate and phosphorus from a marine clay soil via tile drains	Ulen, Barbro; Alex, Gunborg; Kreuger, Jenny; Svanbaeck, Annika; Etana, Ararso	Acta agriculturae Scandinavica (2012), pp. 241-251 ISSN: 1651-1913 Published by: Taylor & Francis Group Source Note: 2012 Nov. 1, v. 62, no. sup2	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812421-01-1	Leaching of N, P and glyphosate from two soils after herbicide treatment and incorporation of a ryegrass catch crop	Aronsson, H; Stenberg, M; Ulen, B	Soil use and management (2011), Volume 27, Number 1, pp. 54-68 ISSN: 0266-0032 Published by: Blackwell Publishing Ltd Source Note: 2011 Mar., v. 27, no. 1	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			Y
M-812168-01-1	Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils.	Kjaer Jeanne Ernsten Vibeke; Jacobsen Ole H; Hansen Nis; de Jonge Lis Wollesen; Olsen Preben	Chemosphere, (2011 Jul) Vol. 84, No. 4, pp. 471-9. Electronic Publication Date: 9 Apr 2011 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812164-01-1	Glyphosate transport through weathered granite soils under irrigated and non-irrigated conditions--Barcelona, Spain.	Candela Lucila Caballero Juan; Ronen Daniel	The Science of the total environment, (2010 May 15) Vol. 408, No. 12, pp. 2509-16. Electronic Publication Date: 27 Mar 2010 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813244-01-1	(Bio)degradation of glyphosate in water-sediment microcosms - A stable isotope co-labeling approach.	Wang Shizong Seiwert Bettina; Reemtsma Thorsten Kastner Matthias; Miltner Anja Schaffer Andreas Yang Qi Nowak Karolina M	Water research, (20160801) Vol. 99, pp. 91-100. Electronic Publication Date: 19 Apr 2016 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813508-01-1	Insight of UV-vis spectra and atmospheric implication for the reaction of OH radical towards glyphosate herbicide and its hydrates	Holtomo, Olivier; Mbigah, Manain Derrick; Nsangou, Mama; Motapon, Ousmanou	RSC Advances (2021), 11(27), 16404-16418 CODEN: RSCACL; ISSN: 2046-2069	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813272-01-1	Glyphosate and AMPA distribution in wind-eroded sediment derived from loess soil.	Bento Celia P M Goossens Dirk Rezaei Mahrooz Riksen Michel; Ritsema Coen J; Geissen Violette Mol Hans G J	Environmental pollution (Barking, Essex : 1987), (2017 Jan) Vol. 220, No. Pt B, pp. 1079-1089. Electronic Publication Date: 18 Nov 2016 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813380-01-1	Effect of UV-A, UV-B and UV-C irradiation of glyphosate on photolysis and mitigation of aquatic toxicity.	Papagiannaki, Dimitra; Medana, Claudio; Binetti, Rita; Calza, Paola; Roslev, Peter [Reprint Author]	Scientific Reports, (NOV 20 2020) Vol. 10, No. 1, pp. Article No.: 20247. http://www.nature.com/srep . ISSN: 2045-2322. E-ISSN: 2045-2322.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813507-01-1	Cocktails of pesticide residues in conventional and organic farming systems in Europe - Legacy of the past and turning point for the future.	Geissen Violette; Oostindie Klaas; Bin Zhaoqi; Pyne Erin; Busink Sjors; Ritsema Coen J Silva Vera Lwanga Esperanza Huerta Beriot Nicolas Zomer Paul; Mol Hans	Environmental pollution (Barking, Essex : 1987), (2021 Jun 01) Vol. 278, pp. 116827. Electronic Publication Date: 8 Mar 2021 Journal code: 8804476. E-ISSN: 1873-6424. L-ISSN: 0269-7491.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813561-01-1	Understanding the origins of herbicides metabolites in an agricultural watershed through their spatial and seasonal variations.	Piel Stephanie; Grandcoin Alexis; Baures Estelle	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2021 Feb 09) pp. 1-17. Electronic Publication Date: 9 Feb 2021 Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813315-01-1	Monitoring of glyphosate and AMPA in soil samples from two olive cultivation areas in Greece: aspects related to spray operators activities	Karanasios, Evangelos; Karasali, Helen; Marousopoulou, Anna; Akrivou, Antigoni; Markellou, Emilia	Environmental Monitoring and Assessment, (2018) Vol. 190, No. 6, pp. 1-15. CODEN: EMASDH. ISSN: 0167-6369.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812489-01-1	Distribution of glyphosate and aminomethylphosphonic acid (AMPA) in agricultural topsoils of the European Union	Silva, Vera; Arwyn Jones; Coen J Ritsema; Hans G J Mol; Luca Montanarella; Oihane FernAXA Indez-Ugalde; Violette Geissen	Science of the total environment (2017) ISSN: 0048-9697 Published by: Elsevier B.V. Source Note: 2017,	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812189-01-1	Transport of Glyphosate and Aminomethylphosphonic Acid under Two Soil Management Practices in an Italian Vineyard.	Napoli Marco; Marta Anna Dalla; Zanchi Camillo A; Orlandini Simone	Journal of environmental quality, (2016 Sep) Vol. 45, No. 5, pp. 1713-1721. Journal code: 0330666. ISSN: 0047-2425. L-ISSN: 0047-2425.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813231-01-1	MONITORING AND BIOLOGICAL EVALUATION OF SURFACE WATER AND SOIL MICROPOLLUTANTS IN HUNGARY	Szekacs, Andras (Reprint) Szekacs, Andras (Reprint); Moertl, Maria; Fekete, Gabor; Fejes, Agnes; Darvas, Bela Dombos, Miklos; Szecsy, Orsolya; Anton, Attila	CARPATHIAN JOURNAL OF EARTH AND ENVIRONMENTAL SCIENCES, (AUG 2014) Vol. 9, No. 3, pp. 47-60. ISSN: 1842-4090.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812392-01-1	The herbicide glyphosate and its metabolite AMPA in the Lavaux vineyard area, western Switzerland: proof of widespread export to surface waters. Part II: the role of infiltration and surface runoff.	Daouk Silwan De Alencastro Luiz F; Pfeifer Hans-Rudolf	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes. (2013) Vol. 48, No. 9, pp. 725-36. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813517-01-1	Pesticide leaching through sandy and loamy fields - Long-term lessons learnt from the Danish Pesticide Leaching Assessment Programme	Rosenbom, Annette E.; Olsen, Preben; Plauborg, Finn; Grant, Ruth; Juhler, Rene K.; Brusch, Walter; Kjaer, Jeanne	Environmental Pollution (Oxford, United Kingdom), (2015) Vol. 201, pp. 75-90. CODEN: ENPOEK. ISSN: 0269-7491.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813286-01-1	Occurrence of the herbicide glyphosate and its metabolite AMPA in surface waters in Switzerland determined with on-line solid phase extraction LC-MS/MS.	Poiger Thomas; Buerge Ignaz J; Bachli Astrid; Muller Markus D; Balmer Marianne E	Environmental science and pollution research international, (2017 Jan) Vol. 24, No. 2, pp. 1588-1596. Electronic Publication Date: 27 Oct 2016 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812456-01-1	A moni-modeling approach to manage groundwater risk to pesticide leaching at regional scale	Di Guardo, Andrea; Finizio, Antonio	Science of the Total Environment, (2016) Vol. 545-546, pp. 200-209. CODEN: STENDL. ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813213-01-1	Pesticide occurrence in groundwater and the physical characteristics in association with these detections in Ireland	McManus, Sarah-Louise; Richards, Karl G.; Grant, Jim; Mannix, Anthony; Coxon, Catherine E.	Environmental Monitoring and Assessment, (2014) Vol. 186, No. 11, pp. 7819-7836. CODEN: EMASDH. ISSN: 0167-6369.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813196-01-1	Leaching of Glyphosate and Aminomethylphosphonic Acid from an Agricultural Field over a Twelve-Year Period	Norgaard, Trine; Olsen, Preben; de Jonge, Lis W.; Moldrup, Per; Ferre, Ty P. A.; Rosenbom, Annette E.	Vadose Zone Journal; Vadose Zone Journal (1 Oct 2014) Volume 13, Number 10, 18 p., 48 refs. DOI: 10.2136/vzj2014.05.0054 Published by: Soil Science Society of America,	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-467952-01-1	Determination of glyphosate residues in Hungarian water samples by immunoassay	Moertl, Maria; Nemeth, Gyoengyi; Juracek, Judit; Darvas, Bela; Kamp, Lisa; Rubio, Fernando; Szekacs, Andras	Microchemical Journal (2013), Volume 107, pp. 143-151 ISSN: 0026-265X Published by: Elsevier B.V. Source Note: 2013 Mar., v. 107	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-468019-01-1	Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by on-line solid-phase extraction followed by liquid chromatography coupled to tandem mass spectrometry.	Sanchis Josep Kantiani Lina; Llorca Marta; Rubio Fernando; Ginebreda Antoni; Fraile Josep; Garrido Teresa; Farre Marinella	Analytical and bioanalytical chemistry, (2012 Mar) Vol. 402, No. 7, pp. 2335-45. Electronic Publication Date: 20 Nov 2011 Journal code: 101134327. E-ISSN: 1618-2650. L-ISSN: 1618-2642.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.	Y		
M-813164-01-1	Natural attenuation of priority and emerging contaminants during river bank filtration and artificial recharge	Bruchet, Auguste; Robert, Samuel; Esperanza, Mar; Janex-Habibi, Marie-Laure; Miege, Cecile; Coquery, Marina; Budzinski, Helene; Lemenach, Karine	European Journal of Water Quality, (2011) Vol. 42, No. 2, pp. 123-133. CODEN: EJWQAT. ISSN: 1818-8710.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812471-01-1	A new methodology to identify surface water bodies at risk by using pesticide monitoring data: The glyphosate case study in Lombardy Region (Italy)	Di Guardo, Andrea; Antonio Finizio	Science of the total environment (2017) ISSN: 0048-9697 Published by: Elsevier B.V. Source Note: 2017,	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812226-01-1	Seasonal Dynamics of Glyphosate and AMPA in Lake Greifensee: Rapid Microbial Degradation in the Epilimnion During Summer.	Huntscha Sebastian; Buhlmann Andreas; Ahrens Christian H; Frey Jurg E; Buerge Ignaz J; Balmer Marianne E; Poiger Thomas Stravs Michael A; Pomati Francesco; Hollender Juliane Stravs Michael A; Hollender Juliane Ahrens Christian H Pomati Francesco	Environmental science & technology, (2018 Apr 17) Vol. 52, No. 8, pp. 4641-4649. Electronic Publication Date: 27 Mar 2018 Journal code: 0213155. E-ISSN: 1520-5851. L-ISSN: 0013-936X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813445-01-1	Herbicides in river water across the northeastern Italy: occurrence and spatial patterns of glyphosate, aminomethylphosphonic acid, and glufosinate ammonium.	Masiol Mauro Gianni Biagio; Prete Marco	Environmental science and pollution research international, (2018 Aug) Vol. 25, No. 24, pp. 24368-24378. Electronic Publication Date: 15 Jun 2018 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813111-01-1	Long-term impact of reduced tillage on water and pesticide flow in a drained context	Dairon, R.; Dutertre, A.; Tournebize, J.; Marks-Perreau, J.; Carlier, N.	Environmental Science and Pollution Research (2017), 24(8), 6866-6877 CODEN: ESPLEC; ISSN: 0944-1344	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-589692-01-1	High frequency monitoring of pesticides in runoff water to improve understanding of their transport and environmental impacts.	Lefrancq Marie Jadas-Hecart Alain; Landry David La Jeunesse Isabelle Payraudeau Sylvain	The Science of the total environment, (2017 Jun 01) Vol. 587-588, pp. 75-86. Electronic Publication Date: 24 Feb 2017 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813281-01-1	Vegetative buffer strips for reducing herbicide transport in runoff: effects of buffer width, vegetation, and season.	Lerch, R. N.; Lin, C. H.; Goyne, K. W.; Kremer, R. J.; Anderson, S. H.	Journal of the American Water Resources Association (2017), Volume 53, Number 3, pp. 667-683 ISSN: 1093-474X DOI: 10.1111/1752-1688.12526 Published by: American Water Resources Association (AWRA), Middleburg URL (Availability): http://onlinelibrary.wiley .	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-642990-01-1	Relationships between past and present pesticide applications and pollution at a watershed outlet: The case of a horticultural catchment in Martinique, French West Indies.	Mottes Charles Lesueur Jannoyer Magalie Le Bail Marianne Guene Mathilde; Carles Celine Malezieux Eric	Chemosphere, (2017 Oct) Vol. 184, pp. 762-773. Electronic Publication Date: 16 Jun 2017 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812460-01-1	Multicontamination phenomena occur more often than expected in Mediterranean coastal watercourses: Study case of the Tet River (France)	Reoyo-Prats, Brice; Aubert, Dominique; Menniti, Christophe; Ludwig, Wolfgang; Sola, Jennifer; Pujo-Pay, Mireille; Conan, Pascal; Verneau, Olivier; Palacios, Carmen	Science of the Total Environment, (2017) Vol. 579, pp. 10-21. CODEN: STENDL. ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813268-01-1	A hybrid monitoring and modelling approach to assess the contribution of sources of glyphosate and AMPA in large river catchments.	Desmet N Touchant K; Bronders J Seuntjens P Tang T	The Science of the total environment, (2016 Dec 15) Vol. 573, pp. 1580-1588. Electronic Publication Date: 4 Oct 2016 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-629588-01-1	Surface Runoff of Pesticides from a Clay Loam Field in Sweden.	Larsbo Mats; Sandin Maria; Jarvis Nick; Etana Ararso; Kreuger Jenny	Journal of environmental quality, (2016 Jul) Vol. 45, No. 4, pp. 1367-74. Journal code: 0330666. ISSN: 0047-2425. L-ISSN: 0047-2425.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-622676-01-1	Pesticide mixtures in streams of several European countries and the USA	Schreiner, Verena C.; Szoecs, Eduard; Bhowmik, Avit Kumar; Vijver, Martina G.; Schaefer, Ralf B.	Science of the Total Environment, (2016) Vol. 573, pp. 680-689. CODEN: STENDL. ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-530452-01-1	Long-term trends of pesticides in Norwegian agricultural streams and potential future challenges in northern climate	Stenrod, Marianne (Reprint)	ACTA AGRICULTURAE SCANDINAVICA SECTION B-SOIL AND PLANT SCIENCE, (30 APR 2015) Vol. 65, Supp. [2], Sp. iss. SI, pp. 199-216. ISSN: 0906-4710.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-629321-01-1	Monitoring Pesticide Residues in Surface and Ground Water in Hungary: Surveys in 1990-2015	Szekacs, Andras (Reprint) Szekacs, Andras (Reprint); Moertl, Maria; Darvas, Bela	JOURNAL OF CHEMISTRY, (2015) . ISSN: 2090-9063.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812437-01-1	Quantification and characterization of glyphosate use and loss in a residential area.	Tang Ting Boenne Wesley; Desmet Nele; Bronders Jan Seuntjens Piet van Griensven Ann	The Science of the total environment, (2015 Jun 01) Vol. 517, pp. 207-14. Electronic Publication Date: 27 Feb 2015 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-523781-01-1	Micropollutants in urban stormwater: occurrence, concentrations, and atmospheric contributions for a wide range of contaminants in three French catchments	Gasperi, J.; Sebastian, C.; Ruban, V.; Delamain, M.; Percot, S.; Wiest, L.; Mirande, C.; Caupos, E.; Demare, D.; et al.	Environmental Science and Pollution Research, (2014) Vol. 21, No. 8, pp. 5267-5281. CODEN: ESPLEC. ISSN: 0944-1344.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-689205-01-1	Pesticide mass budget in a stormwater wetland.	Maillard Elodie Imfeld Gwenael	Environmental science & technology, (2014) Vol. 48, No. 15, pp. 8603-11. Electronic Publication Date: 17 Jul 2014 Journal code: 0213155. E-ISSN: 1520-5851. L-ISSN: 0013-936X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812409-01-1	Contribution of household herbicide usage to glyphosate and its degradate aminomethylphosphonic acid in surface water drains.	Ramwell Carmel T Kah Melanie; Johnson Paul D	Pest management science, (2014 Dec) Vol. 70, No. 12, pp. 1823-30. Electronic Publication Date: 20 Mar 2014 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-467954-01-1	The herbicide glyphosate and its metabolite AMPA in the Lavaux vineyard area, Western Switzerland: proof of widespread export to surface waters. Part I: method validation in different water matrices.	Daouk Silwan Grandjean Dominique; Chevre Nathalie; De Alencastro Luiz F; Pfeifer Hans-Rudolf	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2013) Vol. 48, No. 9, pp. 717-24. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812398-01-1	A multicomponent snapshot of pharmaceuticals and pesticides in the river Meuse basin	Houtman, Corine J.; ten Broek, Rob; de Jong, Kevin; Pieterse, Bart; Kroesbergen, Jan	Environmental Toxicology and Chemistry, (2013) Vol. 32, No. 11, pp. 2449-2459. CODEN: ETOCDK. ISSN: 0730-7268.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812174-01-1	Transport and attenuation of dissolved glyphosate and AMPA in a stormwater wetland.	Imfeld Gwenael Lefrancq Marie; Maillard Elodie; Payraudeau Sylvain	Chemosphere, (2013 Jan) Vol. 90, No. 4, pp. 1333-9. Electronic Publication Date: 23 May 2012 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-689196-01-1	Pesticides in roof runoff: study of a rural site and a suburban site.	Vialle C Sablayrolles C; Silvestre J; Monier L; Jacob S; Huau M-C; Montrejeaud-Vignoles M	Journal of environmental management, (2013 May 15) Vol. 120, pp. 48-54. Electronic Publication Date: 15 Mar 2013 Journal code: 0401664. E-ISSN: 1095-8630. L-ISSN: 0301-4797.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812357-01-1	Phyt'Eaux Cites: application and validation of a programme to reduce surface water contamination with urban pesticides.	Botta Fabrizio Fauchon Nils; Blanchoud Helene; Chevreuil Marc; Guery Benedicte	Chemosphere, (2012 Jan) Vol. 86, No. 2, pp. 166-76. Electronic Publication Date: 9 Nov 2011 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812358-01-1	Fate and transport of glyphosate and aminomethylphosphonic acid in surface waters of agricultural basins.	Coupe Richard H Kalkhoff Stephen J; Capel Paul D; Gregoire Caroline	Pest management science, (2012 Jan) Vol. 68, No. 1, pp. 16-30. Electronic Publication Date: 16 Jun 2011 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813170-01-1	Sampling of herbicides in streams during flood events.	Petersen Jens Grant Ruth; Larsen Soren E; Blicher-Mathiesen Gitte	Journal of environmental monitoring : JEM, (2012 Dec) Vol. 14, No. 12, pp. 3284-94. Electronic Publication Date: 15 Nov 2012 Journal code: 100968688. E-ISSN: 1464-0333. L-ISSN: 1464-0325.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812377-01-1	Priority pollutants in urban stormwater: Part 1 - Case of separate storm sewers	Zgheib, Sally; Moilleron, Regis; Chebbo, Ghassan	Water Research, (2012) Vol. 46, No. 20, pp. 6683-6692. CODEN: WATRAG. ISSN: 0043-1354.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813139-01-1	Micropollutants in stormwater runoff and combined sewer overflow in the Copenhagen area, Denmark.	Birch H Mikkelsen P S; Jensen J K; Lutzhoft H-C Holten	Water science and technology : a journal of the International Association on Water Pollution Research, (2011) Vol. 64, No. 2, pp. 485-93. Journal code: 9879497. ISSN: 0273-1223. L-ISSN: 0273-1223.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812375-01-1	Pollutant concentrations and fluxes in both stormwater and wastewater at the outlet of two urban watersheds in Nantes (France)	Lamprea, K; Ruban, V	Urban Water Journal [Urban Water J.]. Vol. 8, no. 4, pp. 219-231. 2011. ISSN: 1573-062X E-ISSN: 1744-9006 DOI: 10.1080/1573062X.2011.596211 Published by: Taylor & Francis Group Ltd., 2 Park Square Oxford OX14 4RN United Kingdom URL (Document): http://www	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812353-01-1	Comparative studies on the retardation and reduction of glyphosate during subsurface passage.	Litz N T Weigert A; Krause B; Heise S; Grutmacher G	Water research, (2011 May) Vol. 45, No. 10, pp. 3047-54. Electronic Publication Date: 8 Mar 2011 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-468255-01-1	Removal of pesticide mixtures in a stormwater wetland collecting runoff from a vineyard catchment.	Maillard Elodie Payraudeau Sylvain; Faivre Etienne; Gregoire Caroline; Gangloff Sophie; Imfeld Gwenael	The Science of the total environment, (2011 May 01) Vol. 409, No. 11, pp. 2317-24. Electronic Publication Date: 24 Feb 2011 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813133-01-1	Concentrations of dissolved herbicides and pharmaceuticals in a small river in Luxembourg	Meyer, Berenike; Pailler, Jean-Yannick; Guignard, Cedric; Hoffmann, Lucien; Krein, Andreas	Environmental Monitoring and Assessment, (2011) Vol. 180, No. 1-4, pp. 127-146. CODEN: EMASDH. ISSN: 0167-6369.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-467894-01-1	Use and fate of 17 pesticides applied on a vineyard catchment.	Gregoire, C.; Payraudeau, S.; Domange, N. Editor(s); Chiron, S.	International Journal of Environmental Analytical Chemistry (2010), Volume 90, Number 3/6, pp. 406-420, 39 refs. ISSN: 0306-7319 DOI: 10.1080/03067310903131230 Published by: Taylor & Francis, Abingdon Conference: Proceedings of the 5th European Conference	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812167-01-1	Relevance of urban glyphosate use for surface water quality.	Hanke Irene; Wittmer Irene; Bischofberger Simone; Stamm Christian; Singer Heinz	Chemosphere, (2010 Sep) Vol. 81, No. 3, pp. 422-9. Electronic Publication Date: 8 Aug 2010 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812151-01-1	Pesticides in water supply wells in Zealand, Denmark: A statistical analysis.	Malaguerra, Flavio [Reprint Author]; Albrechtsen, Hans-Jorgen; Thorling, Laerke; Binning, Philip John	Science of the Total Environment, (JAN 1 2012) Vol. 414, pp. 433-444. http://www.journals.elsevier.com/science-of-the-total-environment/#description. CODEN: STENDL. ISSN: 0048-9697. E-ISSN: 1879-1026.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812154-01-1	Long-term relationships among pesticide applications, mobility and soil erosion in a vineyard watershed.	Sabatier Pierre; Poulenard Jerome; Fanget Bernard; Develle Anne-Lise; Ployon Estelle; Pignol Cecile; Arnaud Fabien; Reyss Jean-Louis; Wilhelm Bruno; Naffrechoux Emmanuel; Dorioz Jean-Marcel; Montuelle Bernard	Proceedings of the National Academy of Sciences of the United States of America, (2014 Nov 04) Vol. 111, No. 44, pp. 15647-52. Electronic Publication Date: 13 Oct 2014 Journal code: 7505876. E-ISSN: 1091-6490. L-ISSN: 0027-8424. Report No.: NLM-PMC422612	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813336-01-1	Monitoring of Glyphosate, Glufosinate-ammonium, and (Aminomethyl) phosphonic acid in ambient air of Provence-Alpes-Cote-d'Azur Region, France.	Ravier, Sylvain; Desert, Marine; Gille, Gregory; Armengaud, Alexandre; Wortham, Henri; Quivet, Etienne [Reprint Author]	Atmospheric Environment, (MAY 1 2019) Vol. 204, pp. 102-109. https://www.journals.elsevier.com/atmospheric-environment/ . ISSN: 1352-2310. E-ISSN: 1873-2844.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812462-01-1	The fate of organic micropollutants during long-term/long-distance river bank filtration	Hamann, Enrico; Stuyfzand, Pieter J.; Greskowiak, Janek; Timmer, Harrie; Massmann, Gudrun	Science of the Total Environment, (2016) Vol. 545-546, pp. 629-640. CODEN: STENDL. ISSN: 0048-9697.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-812405-01-1	Microbial pesticide removal in rapid sand filters for drinking water treatment--potential and kinetics.	Hedegaard Mathilde J Albrechtsen Hans-Jorgen	Water research, (2014 Jan 01) Vol. 48, pp. 71-81. Electronic Publication Date: 25 Sep 2013 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813190-01-1	Removal and degradation of glyphosate in water treatment: a review.	Joensson, Joergen [Reprint Author]; Camm, Rob; Hall, Tom	Journal of Water Supply Research and Technology - AQUA, (2013) Vol. 62, No. 7, pp. 395-408. CODEN: AQUAAA. ISSN: 0003-7214. E-ISSN: 1365-2087.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813188-01-1	Assessment of the contamination of drinking water supply wells by pesticides from surface water resources using a finite element reactive transport model and global sensitivity analysis techniques	Malaguerra, Flavio; Albrechtsen, Hans-Jorgen; Binning, Philip John	Journal of hydrology (2013), Volume 476, pp. 321-331 ISSN: 0022-1694 Published by: Elsevier B.V. Source Note: 2013 Jan. 7, v. 476	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813156-01-1	Occurrence and fate of relevant substances in wastewater treatment plants regarding Water Framework Directive and future legislations	Ruel, S. Martin; Choubert, J.-M.; Budzinski, H.; Miege, C.; Esperanza, M.; Coquery, M.	Water Science and Technology, (2012) Vol. 65, No. 7, pp. 1179-1189. CODEN: WSTED4. ISSN: 0273-1223.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813136-01-1	On-site evaluation of the removal of 100 micro-pollutants through advanced wastewater treatment processes for reuse applications.	Ruel, S. Martin [Reprint Author]; Choubert, J. M.; Esperanza, M.; Miege, C.; Navalon Madrigal, P.; Budzinski, H.; Le Menach, K.; Lazarova, V.; Coquery, M.	Water Science and Technology, (2011) Vol. 63, No. 11, pp. 2486-2497. CODEN: WSTED4. ISSN: 0273-1223.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-509807-01-1	Reverse osmosis followed by activated carbon filtration for efficient removal of organic micropollutants from river bank filtrate.	Kegel F Schoonenberg Rietman B M; Verliefde A R D	Water science and technology : a journal of the International Association on Water Pollution Research, (2010) Vol. 61, No. 10, pp. 2603-10. Journal code: 9879497. ISSN: 0273-1223. L-ISSN: 0273-1223.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-812345-01-1	Studies on degradation of glyphosate by several oxidative chemical processes: ozonation, photolysis and heterogeneous photocatalysis.	Assalin Marcia R De Moraes Sandra G; Queiroz Sonia C N; Ferracini Vera L; Duran Nelson	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2010 Jan) Vol. 45, No. 1, pp. 89-94. Journal code: 7607167. E-ISSN: 1532-4109. L-ISSN: 0360-1234.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			
M-813138-01-1	"Ozone" and "GAC filtration" synergy for removal of emerging micropollutants in a drinking water treatment plant?	Boucherie, C.; Lecarpentier, C.; Fauchon, N.; Djafer, M.; Heim, V.	Water Science and Technology: Water Supply (2010), Volume 10, Number 5, pp. 860-868, 20 refs. ISSN: 1606-9749 DOI: 10.2166/ws.2010.837 Published by: IWA Publishing, London URL (Availability): http://www.iwaponline.com/ws/01005/0860/010050860.pdf	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Conclusion of reliability assessment	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812165-01-1	Glyphosate degradation in water employing the H2O2/UVC process.	Manassero A Passalia C; Negro A C; Cassano A E; Zalazar C S	Water research, (2010 Jul) Vol. 44, No. 13, pp. 3875-82. Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	1	A summary for this article is provided as an appendix.			
M-813217-01-1	Effects of single rainfall events on leaching of glyphosate and bentazone on two different soil types, using the DAISY model	Rasmussen, Signe B.; Abrahamsen, Per; Nielsen, Marie H.; Holm, Peter E.; Hansen, Soren	Vadose Zone Journal (1 Nov 2015) Volume 14, Number 11, 15 p., 68 refs. DOI: 10.2136/vzj2014.11.0164 Published by: Soil Science Society of America,	Category A, Relevant & reliable or reliable with restrictions articles after detailed assessment	2	A summary for this article is provided as an appendix.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812491-01-1	Analysis of glyphosate degradation in a soil microcosm	Ia Cecilia, Daniele; Federico Maggi	Environmental pollution (2017) ISSN: 0269-7491 Published by: Elsevier Ltd Source Note: 2017,	Category B, Relevant but supplementary articles after detailed assessment	Factors affecting chemical and microbial degradation of glyphosate.			
M-812451-01-1	Degradation and Isotope Source Tracking of Glyphosate and Aminomethylphosphonic Acid.	Li Hui; Joshi Sunendra R; Jaisi Deb P	Journal of agricultural and food chemistry, (2016 Jan 27) Vol. 64, No. 3, pp. 529-38. Electronic Publication Date: 13 Jan 2016 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Category B, Relevant but supplementary articles after detailed assessment	Provides information on the molecular mechanism of glyphosate degradation. No information relevant for route of degradation.			
M-812242-01-1	Glyphosate dispersion, degradation, and aquifer contamination in vineyards and wheat fields in the Po Valley, Italy.	Ia Cecilia Daniele; Tang Fiona H M; Maggi Federico; Coleman Nicholas V; Vervoort R Willem; Conoley Chris	Water research, (20181201) Vol. 146, pp. 37-54. Electronic Publication Date: 8 Sep 2018 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Category B, Relevant but supplementary articles after detailed assessment	Numeric model used to predict glyphosate degradation in soil layers and concentrations of glyphosate and AMPA in shallow aquifer from use of glyphosate in vineyards and wheat fields in Po Valley, Italy. See Conclusions for results of interest. Since model, not directly relevant to risk assessment.			
M-812248-01-1	Effect of temperature, pH and total organic carbon variations on microbial turnover of (13)C3(15)N-glyphosate in agricultural soil.	Muskus Angelica M; Krauss Martin; Miltnr Anja; Hamer Ute; Nowak Karolina M	The Science of the total environment, (2019 Mar 25) Vol. 658, pp. 697-707. Electronic Publication Date: 15 Dec 2018 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Study of effect of temperature, soil pH, total organic carbon on degradation of 13C and 15N glyphosate to nonextractable residues. Study conducted in Germany. Provides supplemental information since nonextractable residues not directly considered in risk assessment.			
M-803581-01-1	Fate and availability of glyphosate and AMPA in agricultural soil.	Simonsen Louise; Fomsgaard Inge S; Svensmark Bo; Spliid Niels Henrik	Journal of environmental science and health. Part. B, Pesticides, food contaminants, and agricultural wastes, (2008 Jun) Vol. 43, No. 5, pp. 365-75.	Category B, Relevant but supplementary articles after detailed assessment	The experimental setup and analytical method are quite well described. The study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Tested soil was not glyphosate free.	Y		
M-803661-01-1	Desorption and time-dependent sorption of herbicides in soils	Mamy, L; Barriuso, E	European journal of soil science (2007), Volume 58, Number 1, pp. 174-187 ISSN: 1351-0754 Published by: Oxford, UK : Blackwell Publishing Ltd Source Note: 2007 Feb., v. 58, no. 1	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method are quite well described. The study has some deficiencies and results are not presented in detail. Thus, endpoints cannot be verified.			
M-813125-01-1	Research on the weed control degree and glyphosate soil biodegradation in apple plantations (Pioneer variety).	Alexa, E.; Micu, R.; Negrea, M.; Sumalan, R.; Iordnescu, O.	Analele Universitatii din Oradea, Fascicula Biologic (2010), Volume 17, Number 1, pp. 5-8, 16 refs. ISSN: 1224-5119 Published by: University of Oradea Publishing House, Oradea URL (Availability): http://www.bioresearch.ro/bioresearch/2010-1/005-008%20-%2	Category B, Relevant but supplementary articles after detailed assessment	Only glyphosate mineralization analyzed (measurement of 14CO2), no details on soil characteristics or experimental setup reported.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812225-01-1	Large variation in glyphosate mineralization in 21 different agricultural soils explained by soil properties.	Nguyen Nghia Khoi Dorfler Ulrike; Welz Gerhard; Schroll Reiner Munch Jean Charles Suhadolc Marjetka	The Science of the total environment, (2018 Jun 15) Vol. 627, pp. 544-552. Electronic Publication Date: 3 Feb 2018 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Study of 21 European soils to determine factors influencing glyphosate mineralization. Exchangeable acidity identified as only univariate factor with negative correlation. NaOH extractable residues have strong negative correlation with glyphosate mineralization. Doesn't fit risk assessment directly but provides useful information.			
Available on the	Carbon mineralisation in orange grove soils treated with different doses of glyphosate-amine salt	Saglikler, H. A.	Journal of Environmental Protection and Ecology (2018), Volume 19, Number 3, pp. 1102-1110, 25 refs. ISSN: 1311-5065 Published by: Balkan Environmental Association (BENA), Thessaloniki URL (Availability): https://docs.google.com/a/jepc-journal.info/viewe	Category B, Relevant but supplementary articles after detailed assessment	Study demonstrates that glyphosate application at up to 4x recommended rates does not decrease carbon mineralisation in soil and in some cases increases carbon mineralisation. Data is supplementary of previously reported work.			
M-812228-01-1	Dissipation of polyoxyethylene tallow amine (POEA) and glyphosate in an agricultural field and their co-occurrence on streambed sediments.	Tush Daniel Maksimowicz Megan M; Meyer Michael T	The Science of the total environment, (2018 Sep 15) Vol. 636, pp. 212-219. Electronic Publication Date: 26 Apr 2018 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Study was conducted in the US but provides data on POEA, Glyphosate, and AMPA adsorption and dissipation in top 45 cm of soil and in stream bed sediments. Conclusions useful in qualitative rather than quantitative way.			
M-813518-01-1	Persistence of glyphosate and aminomethylphosphonic acid in loess soil under different combinations of temperature, soil moisture and light/darkness.	Bento Celia P M Yang Xiaomei Gort Gerrit Xue Sha van Dam Ruud; Zomer Paul; Mol Hans G J Ritsemma Coen J Geissen Violette	The Science of the total environment, (2016 Dec 01) Vol. 572, pp. 301-311. Electronic Publication Date: 6 Aug 2016 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information on the rate of degradation of glyphosate and rate of formation/dissipation of AMPA in loess soil as a function of temperature, soil moisture and light/darkness.			
M-813274-01-1	Identification of the Complete Photodegradation Pathway of Ethylenediaminetetra(methylene phosphonic acid) in Aqueous Solution	Kuhn, Ramona; Toth, Elisabeth; Geppert, Helmut; Fischer, Thomas; Liebsch, Stephan; Martienssen, Marion	Clean: Soil, Air, Water, (2017) Vol. 45, No. 5, pp. n/a. CODEN: CSAWAC. ISSN: 1863-0650.	Category B, Relevant but supplementary articles after detailed assessment	Paper describes another source of AMPA other than glyphosate - supplemental information.			
M-813299-01-1	AminoMethylPhosphonic acid (AMPA) in natural waters: Its sources, behavior and environmental fate.	Grandcoin Alexis Piel Stephanie Baures Estelle	Water research, (20170615) Vol. 117, pp. 187-197. Electronic Publication Date: 27 Mar 2017 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Category B, Relevant but supplementary articles after detailed assessment	Review paper, paper does not report experimental results but it is a comprehensive review on the sources of AMPA in the environment.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
2013_168629_-C	Adsorption of glyphosate and aminomethylphosphonic acid in soils.	Rampazzo, N.; Todorovic, G. R.; Mentler, A.; Blum, W. E. H.	International Agrophysics (2013), Volume 27, Number 2, pp. 203-209, 20 refs. ISSN: 0236-8722 Published by: Institute of Agrophysics, Polish Academy of Sciences, Lublin URL (Availability): http://www.international-agrophysics.org	Category B, Relevant but supplementary articles after detailed assessment	The study investigates glyphosate and AMPA adsorption to 3 different soils. Iron-oxides appear to play an important role in adsorption of glyphosate and AMPA in these soils.			
M-812440-01-1	Sorption of Glyphosate on Soil Components: The Roles of Metal Oxides and Organic Materials	Ololade, I A; Oladoja, N A; Oloye, F F; Alomaja, F; Akerele, D D; Iwaye, J; Aikpokpodion, P	Soil & sediment contamination (2014), Volume 23, Number 5, pp. 571-585 ISSN: 1549-7887 Published by: Taylor & Francis Group Source Note: 2014 Jan. 1, v. 23, no. 5	Category B, Relevant but supplementary articles after detailed assessment	No new data presented, therefore supplementary. The study is also considered unreliable.			
M-803655-01-1	Adsorption of glyphosate on variable-charge, volcanic ash-derived soils.	Caceres-Jensen L; Gan J; Baez M; Fuentes R; Escudey M	Journal of environmental quality, (2009 Jul-Aug) Vol. 38, No. 4, pp. 1449-57. Electronic Publication Date: 20 May 2009	Category B, Relevant but supplementary articles after detailed assessment	Volcanic ash soils were investigated. These are not relevant for EU but can be relevant for Japan. The experimental setup is quite well described. The study has some deficiencies and results are not presented in detail. Thus, endpoints cannot be verified.			
M-469049-01-1	Effects of soil phosphorus status on environmental risk assessment of glyphosate and glufosinate-ammonium.	Laitinen, Pirkko; Siimes, Katri; Ramo, Sari; Jauhiainen, Lauri; Eronen, Liisa; Oinonen, Seija; Hartikainen, Helina.	J. Environ. Qual., Volume 37, Issue 3, Page 830-838, Publication Year 2008	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method quite well described, however several details are not reported (e.g. which phase was analysed). Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.			
M-803650-01-1	Herbicide sorption coefficients in relation to soil properties and terrain attributes on a cultivated prairie.	Farenhorst A; Papiernik S K; Saiyed I; Messing P; Stephens K D; Schumacher J A; Lobb D A; Li S; Lindstrom M J; Schumacher T E	Journal of environmental quality, (2008 May-Jun) Vol. 37, No. 3, pp. 1201-8. Electronic Publication Date: 2 May 2008	Category B, Relevant but supplementary articles after detailed assessment	The article investigated the adsorption of glyphosate on soil. 287 surface soils (0-15 cm) collected in a 10 × 10 m grid across a heavily eroded, undulating, calcareous prairie landscape in Minnesota (U.S.). Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Adsorption coefficients are only presented a mean values for respective slopes of the sampling location.			
M-806439-01-1	Influence of CryIAc toxin on mineralization and bioavailability of glyphosate in soil.	Accinelli, C; Koskinen, W C; Sadowsky, M J	Journal of agricultural and food chemistry (2006), Volume 54, Number 1, pp. 164-169 ISSN: 0021-8561 Source Note: 2006 Jan. 11, v. 54, no. 1	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-806671-01-1	Laboratory studies on glyphosate transport in soils of the Maresme area near Barcelona, Spain: Transport model parameter estimation.	Candela, L.; Alvarez-Benedi, J.; De Melo, M. T. Condesso; Rao, P. S. C.	Geoderma, (JUN 15 2007) Vol. 140, No. 1-2, pp. 8-16.	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.			
M-806099-01-1	Sorption , desorption and mineralisation of the herbicides glyphosate and MCPA in samples from two Danish soil and subsurface profiles.	Sorensen, S R; Schultz, A; Jacobsen, O S; Aamand, J	Environmental pollution (2006) , Volume 141, Number 1, pp. 184-194 ISSN: 0269-7491 Source Note: 2006 May, v. 141, no. 1	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. One soil site was heavily used for agriculture in the past - the usage of glyphosate is likely. Thus, endpoints cannot be verified. Experiments were performed at 10°C. Additionally, no parental mass balance was established.			
M-806127-01-1	Sorption and leaching of 14 C- glyphosate in agricultural soils	Al-Rajab, Abdul Jabbar; Amellal, Samira; Schiavon, Michel	Agronomy for Sustainable Development (Jul 2008) Volume 28, Number 3, pp. 419-428, 25 refs. ISSN 1774-0746 E-ISSN: 1773-0155 DOI: 10.1051/agro:2008014 Published by: EDP Sciences, 17 Avenue du Hoggar - BP 112, Les Ulis Cedex A, F-91944 (FR)	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method quite well described. However, details in the method description are unclear (especially equilibration time). Study has some deficiencies and results are not presented in details. Additionally, no parental mass balance was established. Thus, endpoints cannot be verified.			
M-480998-01-1	Variation of MCPA, metribuzine, methyltriazine-amine and glyphosate degradation, sorption, mineralization and leaching in different soil horizons.	Jacobsen, Carsten S.; Van Der Keur, Peter; Iversen, Bo V.; Rosenberg, Per; Barlebo, Heidi C.; Torp, Soren; Vosgerau, Henrik; Juhler, Rene K.; Ernstsens, Vibeke; Rasmussen, Jim; Brinch, Ulla Catrine; Jacobsen, Ole Horbye.	Environ. Pollut. (Oxford, U. K.), Volume 156, Issue 3, Page 794-802, Publication Year 2008	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Experiments were performed at 10°C and only one concentration was used. Additionally, no parental mass balance was established.			
M-806147-01-1	Variations in soil properties and herbicide sorption coefficients with depth in relation to PRZM (pesticide root zone model) calculations	Farenhorst, A; Mcqueen, D A R; Saiyed, I; Hilderbrand, C; Li, S; Lobb, D A; Messing, P; Schumacher, T E; Papiernik, S K; Lindstrom, M J	Geoderma (2009) , Volume 150, Number 3-4, pp. 267-277 Source Note: 2009 May 15, v. 150, issue 3-4	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method quite well described. Study has some deficiencies and results are not presented in details. Additionally, no parental mass balance was established. Thus, endpoints cannot be verified.			
M-812222-01-1	Unravelling the nature of glyphosate binding to goethite surfaces by ab initio molecular dynamics simulations.	Ahmed Ashour A Leinweber Peter; Kuhn Oliver	Physical chemistry chemical physics : PCCP, (2018 Jan 17) Vol. 20, No. 3, pp. 1531-1539. Journal code: 100888160. E-ISSN: 1463-9084. L-ISSN: 1463-9076.	Category B, Relevant but supplementary articles after detailed assessment	Explore possible binding mechanisms for glyphosate with three goethite surface planes (010, 001, and 100) in the presence of water. Supplementary not directly relevant to EU risk assessment.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812449-01-1	Effect of humic acid on the adsorption/desorption behavior of glyphosate on goethite. Isotherms and kinetics.	Arroyave Jeison Manuel; Waiman Carolina C; Zanini Graciela P Avena Marcelo J	Chemosphere, (2016 Feb) Vol. 145, pp. 34-41. Electronic Publication Date: 1 Dec 2015 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	Study of effects of humic acid (HA) on the adsorption/desorption of glyphosate (Gly) on goethite. Not related to efate guideline but supplemental information on glyphosate sorption.			
M-812483-01-1	Glyphosate sorption to soils of Argentina. Estimation of affinity coefficient by pedotransfer function	De Geronimo, Eduardo; Virginia C Aparicio; Jose L Costa	Geoderma (2018), Volume 322, pp. 140-148 ISSN: 0016-7061 Published by: Elsevier B.V. Source Note: 2018 July 15, v. 322	Category B, Relevant but supplementary articles after detailed assessment	Reports most important parameters for glyphosate adsorption. Provides equation to predict Freundlich constant Kf. Useful qualitative information but not directly relevant for risk assessment.			
M-813265-01-1	Variability of glyphosate and diuron sorption capacities of ditch beds determined using new indicator-based methods.	Dollinger Jeanne Dages Cecile; Negro Sandrine; Voltz Marc Bailly Jean-Stephane	The Science of the total environment, (2016 Dec 15) Vol. 573, pp. 716-726. Electronic Publication Date: 31 Aug 2016 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information of glyphosate sorption. Sorption properties of glyphosate to the ditch-bed materials			
M-813298-01-1	Using fluorescent dyes as proxies to study herbicide removal by sorption in buffer zones.	Dollinger Jeanne; Dages Cecile; Voltz Marc	Environmental science and pollution research international, (2017 Apr) Vol. 24, No. 12, pp. 11752-11763. Electronic Publication Date: 23 Mar 2017 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	Soil adsorption data for glyphosate are reported but they are well within the numbers reported in the dossier. Adsorption compared to that of sulforhodamine B fluorescent dye.			
M-812418-01-1	Modeling the release of organic contaminants during compost decomposition in soil.	Geng Chunnu Haudin Claire-Sophie Zhang Yuan Lashermes Gwenaelle Houot Sabine Garnier Patricia	Chemosphere, (2015 Jan) Vol. 119, pp. 423-431. Electronic Publication Date: 30 Jul 2014 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	The paper is about degradation and adsorption of glyphosate on compost and soils and the data is consistent with endpoints reported in the dossier it does not change the risk assessment.			
M-812387-01-1	Modelling pesticide sorption in the surface and subsurface soils of an agricultural catchment.	Ghafoor Abdul Jarvis Nicholas J; Stenstrom John	Pest management science, (2013 Aug) Vol. 69, No. 8, pp. 919-29. Electronic Publication Date: 21 Dec 2012 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Category B, Relevant but supplementary articles after detailed assessment	Sorption of glyphosate was measured in surface and subsurface soils to test an 'extended' partitioning model that also accounts for inorganic sorbents and pH as well as organic sorbents.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813294-01-1	Glyphosate binding in soil as revealed by sorption experiments and quantum-chemical modeling.	Gros Peter; Leinweber Peter Ahmed Ashour Kuhn Oliver	The Science of the total environment, (2017 May 15) Vol. 586, pp. 527-535. Electronic Publication Date: 21 Feb 2017 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Multitude of binding mechanisms to clay minerals and organic colloids studied make the occurrence of free glyphosate rather unlikely but a leaching of glyphosate complexes via preferential flow path through soil and transfer to waterways rather likely.			
M-812482-01-1	Sorption and desorption behaviours of 2,4-D and glyphosate in calcareous soil from Antalya, Turkey	Ozbay, Bilge; Gokce Akyol; Ismail Ozbay; Nihat Hakan Akyol	Water and environment journal (2018), Volume 32, Number 1, pp. 141-148 ISSN: 1747-6585 Published by: John Wiley & Sons, Ltd Source Note: 2018 Feb., v. 32, no. 1	Category B, Relevant but supplementary articles after detailed assessment	Test soil was selected to be representative for the region of Antalya, Turkey. The use of oven-dried soil is considered not appropriate.			
M-812252-01-1	Interactions among Glyphosate and Phosphate in Soils: Laboratory Retention and Transport Studies.	Padilla Joshua T; Selim H Magdi	Journal of environmental quality, (20190100) Vol. 48, No. 1, pp. 156-163. Journal code: 0330666. ISSN: 0047-2425. L-ISSN: 0047-2425.	Category B, Relevant but supplementary articles after detailed assessment	Study conducted with U.S. soils but shows that Kf values of glyphosate are lower in the presence of phosphate. Addition of phosphate also impacts glyphosate movement in soil columns. Kf values are in range of previously reported.			
M-813339-01-1	Assessing Glyphosate and Fluridone Concentrations in Water Column and Sediment Leachate.	Pandey, Pramod [Reprint Author]; Caudill, Jeffrey; Lesmeister, Sarah; Zheng, Yawen; Wang, Yi; Stillway, Marie; Hoffmann, Krista; Gilbert, Patricia; Kwong, Michael; Conrad, Louise; Teh, Swee	Frontiers in Environmental Science, (APR 3 2019) Vol. 7, pp. Article No.: 22. http://www.frontiersin.org/environmental_science . ISSN: 2296-665X. E-ISSN: 2296-665X.	Category B, Relevant but supplementary articles after detailed assessment	This study was aimed to improve the existing understanding of the deposition of herbicides from water column to bed sediment and leachate of herbicides from bed sediment to water column. Study done in U.S. Study was prompted by herbicide treatment of water for aquatic weeds. Results may provide useful information although not directly relevant for EU risk assessment.			
M-812459-01-1	Prediction of the glyphosate sorption coefficient across two loamy agricultural fields	Paradelo, Marcos; Trine Norgaard; Per Moldrup; T P A FerrA©; K G I D Kumari; Emmanuel Arthur; Lis W de Jonge	Geoderma (2015), Volume 259-260, pp. 224-232 ISSN: 0016-7061 Published by: Elsevier B.V. Source Note: 2015 Dec., v. 259-260	Category B, Relevant but supplementary articles after detailed assessment	Study of 9 soil factors influencing glyphosate sorption in 2 different fields. Not related to an efate guideline, but supplementary information.			
M-812458-01-1	Soil characteristics and herbicide sorption coefficients in 140 soil profiles of two irregular undulating to hummocky terrains of western Canada	Singh, Baljeet; Annemieke Farenhorst; Janette Gaultier; Dan Pennock; Dani Degenhardt; Ross McQueen	Geoderma (2014), pp. 107-116 ISSN: 0016-7061 Published by: Elsevier B.V. Source Note: 2014 Nov., v. 232-234	Category B, Relevant but supplementary articles after detailed assessment	Soil adsorption data for glyphosate are reported but they are well within the numbers reported in the dossier.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813287-01-1	The simultaneous presence of glyphosate and phosphate at the goethite surface as seen by XPS, ATR-FTIR and competitive adsorption isotherms	Waiman, Carolina V; Graciela P Zanini; Hongfeng Chen; Jeison M Arroyave; Marcelo J Avena; Wenfeng Tan	Colloids and Surfaces A: Physicochemical and Engineering Aspects (2016), Volume 498, pp. 121-127 ISSN: 0927-7757 Published by: Elsevier B.V. Source Note: 2016 June 05, v. 498	Category B, Relevant but supplementary articles after detailed assessment	The study does not investigate adsorption on soil but on a mineral. The study does not include an endpoint relevant for the risk assessment or as supporting information.			
M-813479-01-1	Montmorillonites Can Tightly Bind Glyphosate and Paraquat Reducing Toxin Exposures and Toxicity	Wang Meichen; Orr Asuka A; He Shujun; Dalaijamts Chimeddulam; Chiu Weihsueh A; Tamamis Phanourios; Phillips Timothy D	ACS omega, (2019 Oct 29) Vol. 4, No. 18, pp. 17702-17713. Electronic Publication Date: 17 Oct 2019 Journal code: 101691658. E-ISSN: 2470-1343. L-ISSN: 2470-1343. Report No.: PMC-PMC6822125.	Category B, Relevant but supplementary articles after detailed assessment	Article provides binding properties of glyphosate to calcium and sodium montmorillonite clay. Supplementary since clay is a soil component, not a soil.			
M-813520-01-1	Molecular Insights into Glyphosate Adsorption to Goethite Gained from ATR-FTIR, Two-Dimensional Correlation Spectroscopy, and DFT Study.	Yan Wei; Jing Chuanyong	Environmental science & technology, (2018 Feb 20) Vol. 52, No. 4, pp. 1946-1953. Electronic Publication Date: 30 Jan 2018 Journal code: 0213155. E-ISSN: 1520-5851. L-ISSN: 0013-936X.	Category B, Relevant but supplementary articles after detailed assessment	Study of molecular-level interfacial configuration and reaction mechanism of glyphosate on iron (hydr)oxides and influence of phosphate.			
M-813233-01-1	Use of Fe/Al drinking water treatment residuals as amendments for enhancing the retention capacity of glyphosate in agricultural soils.	Zhao Yuanyuan; Pei Yuansheng Wendling Laura A Wang Changhui	Journal of environmental sciences (China), (2015 Aug 01) Vol. 34, pp. 133-42. Electronic Publication Date: 5 Jun 2015 Journal code: 100967627. ISSN: 1001-0742. L-ISSN: 1001-0742.	Category B, Relevant but supplementary articles after detailed assessment	Use of Fe/Al drinking water treatment residuals (WTRs) as a soil amendment to increase glyphosate sorption and decrease desorption in soils. Supplementary information not directly related to efate guideline studies.			
M-806463-01-1	Particle-facilitated pesticide leaching from differently structured soil monoliths.	Gjettermann B; Petersen C T; Koch C B; Spliid N H; Gron C; Baun D L; Styczen M	Journal of environmental quality, (2009 Nov-Dec) Vol. 38, No. 6, pp. 2382-93. Electronic Publication Date: 29 Oct 2009	Category B, Relevant but supplementary articles after detailed assessment	Experimental setup and analytical method quite well described, however several details are not reported (e.g. which phase was analysed). Study has some deficiencies and results are not presented in details. Thus, endpoints cannot be verified. Additionally, no parental mass balance was established.			
M-812461-01-1	Adsorption and mobility of glyphosate in different soils under no-till and conventional tillage.	Okada, Elena [Reprint Author]; Luis Costa, Jose; Bedmar, Francisco	Geoderma, (FEB 1 2016) Vol. 263, pp. 78-85. http://www.journals.elsevier.com/geoderma/#description . CODEN: GEDMAB. ISSN: 0016-7061. E-ISSN: 1872-6259.	Category B, Relevant but supplementary articles after detailed assessment	Soil adsorption data for glyphosate are reported but they are well within the numbers reported in the dossier.			
M-812201-01-1	Behaviour of glyphosate in a reservoir and the surrounding agricultural soils.	Maqueda C; Undabeytia T; Villaverde J Morillo E	The Science of the total environment, (2017 Sep 01) Vol. 593-594, pp. 787-795. Electronic Publication Date: 30 Mar 2017 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Confirmatory data on sorption and water/sediment behaviour and natural water photolysis of glyphosate.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813325-01-1	Comparative study of glyphosate removal on goethite and magnetite: Adsorption and photo-degradation.	Yang, Ying [Reprint Author]; Deng, Qinzhu; Yan, Wei; Jing, Chuanyong [Reprint Author]; Zhang, Yongli [Reprint Author]	Chemical Engineering Journal, (NOV 15 2018) Vol. 352, pp. 581-589. http://www.sciencedirect.com/science/journal/13858947?sdc=1 . ISSN: 1385-8947. E-ISSN: 1873-3212.	Category B, Relevant but supplementary articles after detailed assessment	Study of photodegradation of glyphosate in environment by goethite and magnetite.			
M-813439-01-1	Mulch of plant residues at the soil surface impact the leaching and persistence of pesticides: A modelling study from soil columns.	Aslam Sohaib Iqbal Akhtar Lafolie Francois Recous Sylvie Benoit Pierre; Garnier Patricia	Journal of contaminant hydrology, (20180700) Vol. 214, pp. 54-64. Electronic Publication Date: 31 May 2018 Journal code: 8805644. E-ISSN: 1873-6009. L-ISSN: 0169-7722.	Category B, Relevant but supplementary articles after detailed assessment	Model developed to predict glyphosate degradation / movement in presence of mulch. Not EU validated model so not relevant for risk assessment. Experimental data used to test model were from previous paper.			
M-812265-01-1	A new rapid procedure for simultaneous determination of glyphosate and AMPA in water at sub µg/L level.	Carretta Laura; Cardinali Alessandra; Zanin Giuseppe; Masin Roberta Marotta Ester	Journal of chromatography. A, (2019 Aug 30) Vol. 1600, pp. 65-72. Electronic Publication Date: 18 Apr 2019 Journal code: 9318488. E-ISSN: 1873-3778. L-ISSN: 0021-9673.	Category B, Relevant but supplementary articles after detailed assessment	Analytical method. Analyzed runoff samples from the Po River Valley of Italy but only ranges of values provided not individual values. Indicates glyphosate concentrations lower in presence of a buffer strip than without buffer strip.			
M-813332-01-1	Potential of terracing to reduce glyphosate and AMPA surface runoff on Latosol	Exterkoetter, Ronan; Danilo Eduardo Rozane; Walquiria Chaves da Silva; Aline Theodoro Toci; Gilcelia Aparecida Cordeiro; Simone Frederigi Benassi; Marcela Boroski	Journal of soils and sediments (2019), Volume 19, Number 5, pp. 2240-2250 ISSN: 1439-0108 Published by: Springer Berlin Heidelberg Source Note: 2019 May, v. 19, no. 5	Category B, Relevant but supplementary articles after detailed assessment	Study in Brazil. Demonstrates effectiveness of terrace in reducing total mass loss of glyphosate and AMPA by reducing runoff volume. Did not reduce concentrations of glyphosate in runoff water. Potentially useful information but not directly relevant to EU risk assessment.			
M-812486-01-1	Antecedent and Post-Application Rain Events Trigger Glyphosate Transport from Runoff-Prone Soils	Richards, Brian K; Anna L Schatz; Julie E Dietze; Karin Teuffer; Ludmilla Aristilde; Michael T Meyer; Steven Pacenka; Tammo S Steenhuis	Environmental science & technology letters (2018), Volume 5, Number 5, pp. 249-254 ISSN: 2328-8930 Published by: American Chemical Society; American Chemical Society Source Note: 2018 Apr. 23, v. 5, no. 5	Category B, Relevant but supplementary articles after detailed assessment	Runoff study in USA, New York State, but proposed soil hydrologic condition in 7 days prespraying is important in determining degree of runoff. Conclusion from study of interest even though data not appropriate for EU risk assessment.			
M-812163-01-1	Can we use a simple modelling tool to validate stormwater biofilters for herbicides treatment?	Zhang, Kefeng; Randelovic, Anja; Deletic, Ana; Page, Declan; McCarthy, David T.	Urban Water Journal (2018) Ahead of Print CODEN: UWJRAU; ISSN: 1573-062X	Category B, Relevant but supplementary articles after detailed assessment	Biofilter validation model. Field validation work done in Australia. Model may be of interest even though field data not directly relevant to EU.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813537-01-1	Comparison of sorption and solute transport behaviour of several herbicides in an alkaline agricultural soil	Akyol, Nihat Hakan; Carroll, Kenneth C.; Ciftci Cortuk, Elgiz; Gunduz, Ozge Can; Sahin, Nurselin	International Journal of Environmental Analytical Chemistry (2021) Ahead of Print CODEN: IJEAA3; ISSN: 0306-7319	Category B, Relevant but supplementary articles after detailed assessment	The objective of this study was to quantify sorption and solute transport of glyphosate in soil column experiments with an alkaline agricultural soil from Turkey. The adsorption coefficient (Kd) for glyphosate was estimated to be 2.14 L/kg.			
M-813341-01-1	Laboratory simulation studies of leaching of the priority pesticides and their transformation products in soils	Suleman, M.; Keely, B. J.	JAPS, Journal of Animal and Plant Sciences (2019), Volume 29, Number 4, pp. 1112-1126, many ref. ISSN: 1018-7081 Published by: Pakistan Agricultural Scientists Forum, Lahore URL (Availability): http://www.thejaps.org.pk/docs/v-29-04/23.pdf	Category B, Relevant but supplementary articles after detailed assessment	It does not follow the OECD Column Leaching Guideline (OECD 312). Rather than applying artificial rain continuously for 48 hr per guideline, an unspecified amount of artificial rain is applied at the end of the day to get 35-40 mL of leachate the following morning.			
M-813224-01-1	The effects of biochar, wood vinegar and plants on glyphosate leaching and degradation	Hagner, Marleena; Penttinen, Olli-Pekka; Tiilikkala, Kari; Setaelae, Heikki	European journal of soil biology (2013), Volume 58, pp. 1-7 ISSN: 1164-5563 Published by: Elsevier Masson SAS Source Note: 2013 , v. 58	Category B, Relevant but supplementary articles after detailed assessment	The paper investigated addition of biochar, plants, and wood vinegar to the soil in pots and reported that biochar decreased the leaching of glyphosate, it is only relevant for mechanism of sorption but not risk assessment.			
M-812249-01-1	A method for determining glyphosate and its metabolite aminomethyl phosphonic acid by gas chromatography-flame photometric detection.	Zhang Weidong; Feng Yanru; Ma Li; An Jing; Zhang Huayin; Cao Mengsi; Zhu Huaijiao; Kang Weijun; Lian Kaoqi	Journal of chromatography. A, (2019 Mar 29) Vol. 1589, pp. 116-121. Electronic Publication Date: 20 Dec 2018 Journal code: 9318488. E-ISSN: 1873-3778. L-ISSN: 0021-9673.	Category B, Relevant but supplementary articles after detailed assessment	Primarily an analytical methods paper but example hydrolysis and column leaching data provided but not sufficient methodology for risk assessment.			
M-806134-01-1	Mineralization and Transfer Processes of 14C-labeled Pesticides in Outdoor Lysimeters	Grundmann, Sabine; Doerfler, Ulrike; Ruth, Bernhard; Loos, Christine; Wagner, Tobias; Karl, Heidrun; Munch, Jean Charles; Schroll, Reiner	Water, air and soil pollution. Focus (2008) , Volume 8, Number 2, pp. 177-185 ISSN: 1567-7230 Published by: Dordrecht : Springer Netherlands Source Note: 2008 Apr., v. 8, no. 2	Category B, Relevant but supplementary articles after detailed assessment	The study has several deficiencies. Furthermore, experimental set-up and analytical results are not described in detail.			
M-813584-01-1	Reducing herbicide use and leaching in agronomically performant maize-based cropping systems: An 8-year study.	Giuliano S Alletto L; Debaeke P Deswarte C; Perdrieux F; Dayde J	The Science of the total environment, (2021 Sep 20) Vol. 788, pp. 147695. Electronic Publication Date: 13 May 2021 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	An 8-year field leaching experiment was carried out at the Domaine de Lamothe — INP PURPAN, Garonne Plain, south-western France (43.506N, 1.237E) from 2011 to 2018. Different cropping systems were compared. Glyphosate and AMPA were detected in less than 50% of the samples and had very low frequencies of leachates with concentration above 1 µg/L (respectively 5% and 0%).			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-803657-01-1	Glyphosate and phosphorus leaching and residues in boreal sandy soil	Laitinen, Pirkko; Ramo, Sari (Reprint); Nikunen, Unto; Jauhainen, Lauri; Turtola, Eila Siimes, Katri	PLANT AND SOIL, (OCT 2009) Vol. 323, No. 1-2, Sp. iss. SI, pp. 267-283. ISSN: 0032-079X.	Category B, Relevant but supplementary articles after detailed assessment	The study does not represent worst case condition. The study period was dry in the whole Southern and Central Finland causing exceptionally low groundwater table levels and droughts in spring 2003. During the whole study the total precipitation was 867 mm in the experimental field, representing 80% of the long-term precipitation. Furthermore, the leaching field was situated in an intensively cultivated region, where the use of glyphosate is common.			
M-812369-01-1	Reply to Comments on "Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils" by Petersen, C.T. and Hansen, S. [Chemosphere 84 (4) (2011) 471-479].	Kjaer, Jeanne [Reprint Author]; Ernsten, Vibeke; de Jonge, Lis Wollesen; Olsen, Preben	Chemosphere, (NOV 2011) Vol. 85, No. 9, pp. 1539-1541. CODEN: CSMHAF. ISSN: 0045-6535. E-ISSN: 1879-1298.	Category B, Relevant but supplementary articles after detailed assessment	letter to editor			
M-812368-01-1	Comments on "Transport modes and pathways of the strongly sorbing pesticides glyphosate and pendimethalin through structured drained soils" by J. Kjaer, V. Ernsten, O.H. Jacobsen, N. Hansen, L.W. de Jonge, P. Olsen [Chemosphere 84(4) (2011) 471-479].	Petersen, Carsten T. [Reprint Author]; Hansen, Soren	Chemosphere, (NOV 2011) Vol. 85, No. 9, pp. 1538. CODEN: CSMHAF. ISSN: 0045-6535. E-ISSN: 1879-1298.	Category B, Relevant but supplementary articles after detailed assessment	letter to editor			
M-812429-01-1	Abiotic degradation of glyphosate into aminomethylphosphonic acid in the presence of metals.	Ascolani Yael J Fuhr J D; Bocan G A; Daza Millone A; Tognalli N; Dos Santos Afonso M; Martiarena M L	Journal of agricultural and food chemistry, (2014 Oct 08) Vol. 62, No. 40, pp. 9651-6. Electronic Publication Date: 29 Sep 2014 Journal code: 0374755. E-ISSN: 1520-5118. L-ISSN: 0021-8561.	Category B, Relevant but supplementary articles after detailed assessment	The paper is about abiotic degradation of glyphosate into AMPA in the presence of metals but it does not change the risk assessment.			
M-812442-01-1	Birnessite-Catalyzed Degradation of Glyphosate: A Mechanistic Study Aided by Kinetics Batch Studies and NMR Spectroscopy.	Paudel, Prajwal; Negusse, Awet; Jaisi, Deb P. [Reprint Author]	Soil Science Society of America Journal, (MAY-JUN 2015) Vol. 79, No. 3, pp. 815-825. CODEN: SSSJD4. ISSN: 0361-5995. E-ISSN: 1435-0661.	Category B, Relevant but supplementary articles after detailed assessment	No relevant information on environmental fate included but a new abiotic (birnessite) degradation of glyphosate is discussed.			
M-812478-01-1	Potential effects of rainwater-borne H2O2 on competitive degradation of herbicides and in the presence of humic acid.	Qin Junhao Li Yongjun; Li Shengnan Li Huashou Lin Chuxia	Chemosphere, (2017 Mar) Vol. 170, pp. 146-152. Electronic Publication Date: 5 Dec 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	Provides information on degradation of glyphosate in the presence of hydrogen peroxide, Fe2+, and humic acid and the presence of another pesticide simulating conditions found in natural waters.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-803575-01-1	Fe(III)-pyruvate and Fe(III)-citrate induced photodegradation of Glyphosate in aqueous solutions	Chen, Yong; Wu, Feng; Zhang, Xu; Deng, Nansheng; Bazhin, Nikolai; Glebov, Evgeni	Journal of Coordination Chemistry, (2007) Vol. 60, No. 22, pp. 2431-2439. CODEN: JCCMBQ. ISSN: 0095-8972.	Category B, Relevant but supplementary articles after detailed assessment	The article shows that glyphosate is stable to photolysis at wavelengths ≥ 365 nm. According to the guideline, waverlength ≥ 290 nm should be investigated.			
M-812469-01-1	The role of Fe(III) on phosphate released during the photo-decomposition of organic phosphorus in deionized and natural waters.	Jiang Yongcan; Kang Naixin; Zhu Duanwei Zhou Yiyong Liu Guanglong	Chemosphere, (2016 Dec) Vol. 164, pp. 208-214. Electronic Publication Date: 31 Aug 2016 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	Study of the role of Fe ³⁺ in photodegradation of glyphosate in natural water.			
M-813460-01-1	Meta-analysis of glyphosate contamination in surface waters and dissipation by biofilms.	Carles Louis Gardon Helene; Joseph Laura; Artigas Joan Sanchis Josep; Farre Marinella	Environment international, (20190300) Vol. 124, pp. 284-293. Electronic Publication Date: 17 Jan 2019 Journal code: 7807270. E-ISSN: 1873-6750. L-ISSN: 0160-4120.	Category B, Relevant but supplementary articles after detailed assessment	High phosphorus concentrations in surface water can reduce complete glyphosate degradation by biofilms and favour the accumulation of AMPA in river water.			
M-812263-01-1	Microbial Turnover of Glyphosate to Biomass: Utilization as Nutrient Source and Formation of AMPA and Biogenic NER in an OECD 308 Test.	Brock Andreas Libonati; Polesel Fabio; Trapp Stefan Rein Arno Nowak Karolina M; Kastner Matthias	Environmental science & technology, (2019 May 21) Vol. 53, No. 10, pp. 5838-5847. Electronic Publication Date: 29 Apr 2019 Journal code: 0213155. E-ISSN: 1520-5851. L-ISSN: 0013-936X.	Category B, Relevant but supplementary articles after detailed assessment	Uses data from another study (Wang, 2016) to test model to predict glyphosate mineralisation, degradation, and incorporation into nonextractable residues. Not directly relevant to EU risk assessment.			
M-813541-01-1	The concentration of glyphosate in the tap water in Greater Poland Region	Kaskzowiak, Krzysztof; Kubacki, Tomasz; Olejniczak, Jacek; Bondarenko, Igor	European Journal of Biological Research, (2021) Vol. 11, No. 1, pp. 57-64. CODEN: EJBRAT. ISSN: 2449-8955.	Category B, Relevant but supplementary articles after detailed assessment	The concentration of glyphosate was measured in 66 randomly collected drinking water samples from separate Water Treatment Plants in Poland. Own data was generated. The concentration of glyphosate in the tested samples did not exceed 0.33 µg/L. The sampling procedure and timing as well as sample volume and storage time prior to analysis are not reported. Furthermore, the analytical method was not described in detail and not validated. The article does not provide numerical concentrations for glyphosate but only the maximum detected concentration. Individual results are only presented graphically and cannot be assigned to a sampling location.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813545-01-1	Levels of glyphosate in vineyard soils and potential adverse effects to the environment.	Fernandes, B.; Paiva, C.; Lopes, T.; Pinto, E.; Ferreira, I. M. P. L. V. O.; Patinha, C.; Duraes, N.; Soares, C.; Fidalgo, F.; Pereira, R.; Cachada, A.	IOBC/WPRS Bulletin (2020), Number 154, pp. 129-132 ISSN: 1027-3115 Published by: International Organization for Biological and Integrated Control of Noxious Animals and Plants (IOBC/OILB), West Palaearctic Regional Section (WPRS/SROP), Dijon Conference: Proceedings of the IOBC/WPRS Working Group "Integrated Protection in Viticulture", Vila Real, Portugal, 5-8 November 2019. URL (Availability): https://www.iobc-wprs.org/members/shop_en.cfm?mod_Shop_detail_produkte=412	Category B, Relevant but supplementary articles after detailed assessment	The levels of glyphosate and AMPA were monitored in two different vineyards from the Douro Demarcated Region (Portugal) over one year from February 2018 to January 2019. The highest concentrations of glyphosate were observed in February (median value of 2.0 mg/kg).			
M-812267-01-1	Characterization of phosphonate-based antiscalants used in drinking water treatment plants by anion-exchange chromatography coupled to electrospray ionization time-of-flight mass spectrometry and inductively coupled plasma mass spectrometry.	Armbruster Dominic; Muller Uwe Happel Oliver	Journal of chromatography. A, (2019 May 18) . Electronic Publication Date: 18 May 2019 Journal code: 9318488. E-ISSN: 1873-3778. L-ISSN: 0021-9673.	Category B, Relevant but supplementary articles after detailed assessment	Article is primarily about identification of impurities in anti-scaling products used in drinking water treatment but AMPA is identified as being present in some antiscalants at concentrations from 1.9 to 157 mg/L after 10,000 fold dilution of the commercial antiscalants. Information may be used qualitatively in EU but not directly for risk assessment.			
M-812413-01-1	Effect of rainfall regimes and mulch decomposition on the dissipation and leaching of S-metolachlor and glyphosate: a soil column experiment.	Aslam Sohaib Iqbal Akhtar; Deschamps Marjolaine; Recous Sylvie; Garnier Patricia; Benoit Pierre	Pest management science, (2015 Feb) Vol. 71, No. 2, pp. 278-91. Electronic Publication Date: 28 May 2014 Journal code: 100898744. E-ISSN: 1526-4998. L-ISSN: 1526-498X.	Category B, Relevant but supplementary articles after detailed assessment	The study describes two soil column leaching tests with glyphosate and S-metolachlor on French soils. Glyphosate recovery from the soil column at Day 0 was only 52%. This recovery is not acceptable to draw further conclusions from the study. The study is considered unreliable.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-681602-01-1	Long-term data from the swedish national environmental monitoring program of pesticides in surface waters	Boye, K.; Lindstroem, B.; Bostroem, G.; Kreuger, J.	Journal of Environmental Quality (2019), 48(4), 1109-1119 CODEN: JEVQAA; ISSN: 1537-2537 URL: https://dl.sciencesocieties.org/publications/jeq	Category B, Relevant but supplementary articles after detailed assessment	Describes pesticide analysis data and pesticide use information available for 4 small watersheds in Sweden. Data is available elsewhere but article provides a description of methodology and sources for data.			
M-813480-01-1	Investigation of the presence of glyphosate and its major metabolite AMPA in Greek soils.	Karasali Helen; Pavlidis George; Marousopoulou Anna	Environmental science and pollution research international, (2019 Dec) Vol. 26, No. 36, pp. 36308-36321. Electronic Publication Date: 12 Nov 2019 Journal code: 9441769. E-ISSN: 1614-7499. L-ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	Paper provides data on glyphosate & AMPA concentrations in Greek soils, but there is no correlating information on glyphosate rates applied or any information on soil characterization.			
M-812286-01-1	Soil microbial communities in diverse agroecosystems exposed to the herbicide glyphosate.	Kepler Ryan M; Cavigelli Michel A; Buyer Jeffery S; Maul Jude E Schmidt Dietrich J Epp; Yarwood Stephanie A Reddy Krishna N Duke Stephen O Bradley Carl A Williams Martin M 2nd	Applied and environmental microbiology, (2019 Dec 13) . Electronic Publication Date: 13 Dec 2019 Journal code: 7605801. E-ISSN: 1098-5336. L-ISSN: 0099-2240.	Category B, Relevant but supplementary articles after detailed assessment	Not relevant to existing endpoint but provide support that glyphosate does not have a negative impact on soil microorganisms.			
M-812488-01-1	Dissipation of the herbicide active ingredient glyphosate in natural water samples in the presence of biofilms	Klatyk, Szandra; Eszter Takacs; Maria Moertl, Angela Foeldi, Zsuzsa Trabert, Eva Acs, Bela Darvas; Andras Szekacs	International journal of environmental analytical chemistry (2017), Volume 97, Number 10, pp. 901-921 ISSN: 1029-0397 Published by: Taylor & Francis Source Note: 2017 Aug. 9, v. 97, no. 10	Category B, Relevant but supplementary articles after detailed assessment	The article reports glyphosate dissipation in irradiated natural water samples from European surface waters under laboratory conditions. The water was only characterised for pH and conductivity. No dark control experiments were conducted. Average results of concentration measurements are only presented as graphical plots and not discussed in detail (focus on effect of biofilms). The study is considered unreliable.			
M-812383-01-1	Time-integrated sampling of glyphosate in natural waters.	Kylin H	Chemosphere, (2013 Feb) Vol. 90, No. 6, pp. 1821-8. Electronic Publication Date: 6 Oct 2012 Journal code: 0320657. E-ISSN: 1879-1298. L-ISSN: 0045-6535.	Category B, Relevant but supplementary articles after detailed assessment	Provides information on storage stability of surface water samples that can be used to evaluate results from other surface water monitoring studies.			
M-468023-01-1	Removal of dissolved pesticide mixtures by a stormwater wetland receiving runoff from a vineyard catchment: an inter-annual comparison	Maillard, Elodie; Payraudeau, Sylvain; Ortiz, Floro; Imfeld, Gwenael	International journal of environmental analytical chemistry (2012), Volume 92, Number 8, pp. 979-994 ISSN: 1029-0397 Published by: Taylor & Francis Group Source Note: 2012 July 20, v. 92, no. 8	Category B, Relevant but supplementary articles after detailed assessment	Confirmatory data showing stormwater wetlands removed glyphosate/AMPA from agricultural runoff.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813206-01-1	Biofiltration vs conventional activated sludge plants: what about priority and emerging pollutants removal?	Mailier, R.; Gasperi, J.; Rocher, V.; Gilbert-Pawlik, S.; Geara-Matta, D.; Moilleron, R.; Chebbo, G.	Environmental Science and Pollution Research, (2014) Vol. 21, No. 8, pp. 5379-5390. CODEN: ESPLEC. ISSN: 0944-1344.	Category B, Relevant but supplementary articles after detailed assessment	Paper compares glyphosate removal in waste water treatment by two primary and two biological treatments.			
M-812423-01-1	Effect of land use on pollution status and risk of fish endocrine disruption in small farmland ponds	Mandiki, Syaghalirwa N M; Gillardin, Virginie; Martens, Koen; Ercken, Dirk; De Roeck, Els; De Bie, Tom; Declerck, Steven A S; De Meester, Luc; Brasseur, Catherine; Van der Heiden, Edwige; Schippo, Marie-Louise; Kestemont, Patrick	Hydrobiologia (2014), Volume 723, Number 1, pp. 103-120 ISSN: 0018-8158 Published by: Springer-Verlag Source Note: 2014 Feb., v. 723, no. 1	Category B, Relevant but supplementary articles after detailed assessment	Provides glyphosate concentrations in 15 Belgian ponds in different seasons and different land uses. Endpoints cannot be used directly in the risk assessment for the renewal of glyphosate at EU level. Only summary glyphosate concentrations available.			
M-812470-01-1	Model-based screening for critical wet-weather discharges related to micropollutants from urban areas.	Mutzner Lena; Staufer Philipp Ort Christoph	Water research, (2016 Nov 01) Vol. 104, pp. 547-557. Electronic Publication Date: 3 Aug 2016 Journal code: 0105072. E-ISSN: 1879-2448. L-ISSN: 0043-1354.	Category B, Relevant but supplementary articles after detailed assessment	Model to predict glyphosate concentration from storm water outlets and combined sewer overflows. Glyphosate does not exceed EQS based on conservative modeling. Not directly relevant for risk assessment but useful information.			
M-812496-01-1	A spatial approach to identify priority areas for pesticide pollution mitigation	Quaglia, Gisela (Reprint); Joris, Ingeborg; Broekx, Steven; Desmet, Nele; Seuntjens, Piet Quaglia, Gisela (Reprint); Seuntjens, Piet Koopmans, Kim Vandaele, Karel Joris, Ingeborg Seuntjens, Piet	JOURNAL OF ENVIRONMENTAL MANAGEMENT, (15 SEP 2019) Vol. 246, pp. 583-593. ISSN: 0301-4797.	Category B, Relevant but supplementary articles after detailed assessment	This paper describes a modeling approach to assess potential risk of glyphosate loads in waterbodies but does not utilize or report measured glyphosate concentrations. Provides supplemental information but not directly relevant for glyphosate EU risk assessment.			
M-812334-01-1	Letter to the editor regarding "Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by on-line solid phase extraction followed by liquid chromatography coupled to tandem mass spectrometry".	Reding, Marie-Anne	Analytical and bioanalytical chemistry, (1 Aug 2012) Vol. 404, No. 2, pp. 613-4; author reply 615-6. E-ISSN: 1618-2650	Category B, Relevant but supplementary articles after detailed assessment	Letter to the Editor to Sanchis et al_2011, Analytical and bioanalytical chemistry, (2012 Mar) Vol. 402, No. 7, pp. 2335-45.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-813506-01-1	Pesticide residues in European agricultural soils - A hidden reality unfolded	Silva, Vera; Coen J Ritsema; Hans G J Mol; Marc Tienstra; Paul Zomer; Violette Geissen	Science of the total environment (2019), Volume 653, pp. 1532-1545 ISSN: 0048-9697 Published by: Elsevier B.V. Source Note: 2019 Feb. 25, v. 653	Category B, Relevant but supplementary articles after detailed assessment	Analysis for glyphosate & AMPA and other pesticides in 317 soil samples from 11 EU countries. Gives indication of residues but no use history,			
M-813234-01-1	Glyphosate and AMPA in the estuaries of the Baltic Sea method optimization and field study.	Skeff Wael Neumann Christine; Schulz-Bull Detlef E	Marine pollution bulletin, (2015 Nov 15) Vol. 100, No. 1, pp. 577-85. Electronic Publication Date: 2 Sep 2015 Journal code: 0260231. E-ISSN: 1879-3363. L-ISSN: 0025-326X.	Category B, Relevant but supplementary articles after detailed assessment	Provides optimized analytical method and surface water monitoring results for 10 estuaries along the Baltic Sea in Germany.			
M-813278-01-1	Insights into natural organic matter and pesticide characterisation and distribution in the Rhone River.	Slomberg, Danielle L. [Reprint Author]; Ollivier, Patrick; Radakovitch, Olivier; Baran, Nicole; Sani-Kast, Nicole; Bruchet, Auguste; Scheringer, Martin; Labille, Jerome [Reprint Author]	Environmental Chemistry, (2017) Vol. 14, No. 1, pp. 64-73. http://www.publish.csiro.au/?nid=188 . ISSN: 1448-2517. E-ISSN: 1449-8979.	Category B, Relevant but supplementary articles after detailed assessment	Supplementary information on glyphosate detection in surfacewater.			
M-812159-01-1	Measures to reduce pesticides leaching into groundwater-based drinking water resources: An appeal to national and local governments, water boards and farmers	Swartjes Frank A; Van der Aa Monique	The Science of the total environment, (2020 Jan 10) Vol. 699, pp. 134186. Electronic Publication Date: 5 Sep 2019 Journal code: 0330500. E-ISSN: 1879-1026. L-ISSN: 0048-9697.	Category B, Relevant but supplementary articles after detailed assessment	Does not provide new data but summarizes exceedances of >75% of 0.1ug/L for GW abstractions used for Drinking Water. Also proposes measures to reduce pesticide concentrations in GW.			
M-812187-01-1	Hysteresis and parent-metabolite analyses unravel characteristic pesticide transport mechanisms in a mixed land use catchment.	Tang, Ting (correspondence); Seuntjens, Piet; Bronders, Jan Tang, Ting (correspondence); van Griensven, Ann Tang, Ting (correspondence); Seuntjens, Piet Stamm, Christian van Griensven, Ann Seuntjens, Piet	Water Research, (2017) Vol. 124, pp. 663-672. Refs: 40 ISSN: 0043-1354; E-ISSN: 1879-2448 CODEN: WATRAG	Category B, Relevant but supplementary articles after detailed assessment	Use of adapted hysteresis modeling to improve our understanding on pesticide metabolite transport behaviours in catchments with diverse pesticide sources and complex transport mechanisms and provide a basis for effective management strategies. Provides information on other source of AMPA besides glyphosate degradation.			

Edition No	Title	Author	Source	Conclusion of classification	Final justification after detailed assessment	IARC Monograph 112 (2015)	JMPR 2016	EPA BE
M-812172-01-1	Dispersion of glyphosate in soils through erosion. Environmental Quality 4	Todorovic, G. R.; Mentler, A.; Rampazzo, N.; Blum, W. E. H.; Eder, A.; Strauss, P. Editor(s): Gilbert, D.; Pattee, E.; Vianello, G.; Antisari, L. V.	Air, water, and soil pollution (2010), pp. 125-138, 36 refs. Published by: GeoL@b Onlus, Imola	Category B, Relevant but supplementary articles after detailed assessment	Analysis of runoff samples from small vegetated field plots after artificial rain directly after glyphosate application is not expected to provide additional relevant data; further, no details on analytical methods are reported.			
M-803467-01-1	Determination of glyphosate and AMPA in surface and waste water using high-performance ion chromatography coupled to inductively coupled plasma dynamic reaction cell mass spectrometry (HPIC-ICP-DRC-MS)	Popp, Maximilian; Hann, Stephan; Mentler, Axel; Fuerhacker, Maria; Stingeder, Gerhard; Koellensperger, Gunda	Analytical and bioanalytical chemistry (2008) , Volume 391, Number 2, pp. 695-699 ISSN: 1618-2642 Published by: Berlin/Heidelberg : Springer-Verlag Source Note: 2008 May, v. 391, no. 2	Category B, Relevant but supplementary articles after detailed assessment	Details on sampling like exact location, timing, duration and sampling method are not available. Therefore, results cannot be related to the application schedule of glyphosate. Furthermore, available information on the analytical method and its validation does not allow for a full assessment of its acceptability.			