

トリアゾール共通代謝物  
公表文献調査結果について

令和6年9月19日  
修正 令和7年1月22日

シンジェンタジャパン株式会社

## 1. 緒言

トリアゾール共通代謝物（1,2,4-トリアゾール、トリアゾール酢酸、トリアゾールアラニン及びトリアゾール乳酸）に関して、再評価資料提出期限の始期（2024年7月1日）の6ヶ月前から過去15年間を含む期間に発行された公表文献について検索し、適合性及び信頼性の評価を行った。検索期間に応じ、以下の3報を提出する。Version 6及びVersion 7は、EUの評価に用いるため提出済みの報告書である。Version 8は、ヘキサコナゾールの日本における再評価申請のために追加検索を行い、Triazole Metabolite Derivative Group 作成の報告書について申請者により日本における評価に合わせて修正並びに追記を行ったものである。

- ・ Literature Search Triazole Derivative Metabolites, Being Common Metabolites of Triazole-Fungicides, **Version 6**, 13<sup>th</sup> May 2019, Triazole Metabolite Derivative Group (EU 既提出)  
検索期間：2003年1月1日～2019年4月10日
- ・ Literature Search Triazole Derivative Metabolites, Being Common Metabolites of Triazole-Fungicides, **Version 7**, 3<sup>rd</sup> July 2020, Triazole Metabolite Derivative Group (EU 既提出)  
検索期間：2019年4月10日～2020年3月23日
- ・ Literature Search Triazole Derivative Metabolites, Being Common Metabolites of Triazole-Fungicides, **Version 8**, 10<sup>th</sup> July 2024, Triazole Metabolite Derivative Group content modified by Syngenta Japan K.K. for submission in Japan. (日本提出用追加検索分)  
検索期間：2020年3月23日～2024年2月2日

## 2. 検索結果のまとめ

検索をおこなった全期間（2003年1月1日～2024年2月2日）の調査結果のまとめを表2-1～表2-3に示す。

表 2-1 データベース間の重複を除いた総論分数

検索分野	データベース間の重複を除いた総論分数			
	Version 6	Version 7	Version 8	計
物理化学的性状	817	25	199	<b>1041</b>
ヒトに対する毒性	1505	60	499	<b>2064</b>
農作物及び畜産物への残留	1227	52	368	<b>1647</b>
生活環境動植物及び家畜に対する毒性	625	13	129	<b>767</b>
環境動態	2071	89	542	<b>2702</b>
合計	<b>6245</b>	<b>239</b>	<b>1737</b>	<b>8221</b>

表 2-2 評価目的との適合性評価（第 1 段階）の結果のまとめ

検索分野	第 1 段階評価結果							
	適合性なし				それ以外（第 2 段階へ）			
	Version 6	Version 7	Version 8	計	Version 6	Version 7	Version 8	計
物理化学的性状	817	25	199	1041	0	0	0	0
ヒトに対する毒性	1501	60	497	2058	4	0	2	6
農作物及び畜産物への残留	1226	52	366	1644	1*	0	2	3
生活環境動植物及び家畜に対する毒性	623	13	126	762	2	0	3	5
環境動態	2071	88	533	2692	0	1	9	10
合計	6238	238	1721	8197	7	1	16	24

\*Version 6 (Table 9.3-1) に誤記があったため、修正した値を記載した。

表 2-3 評価目的との適合性評価（第 2 段階）の結果のまとめ

検索分野	第 2 段階評価結果							
	適合性なし				適合性あり			
	Version 6	Version 7	Version 8	計	Version 6	Version 7	Version 8	計
物理化学的性状	0	0	0	0	0	0	0	0
ヒトに対する毒性	4	0	2	6	0	0	0	0
農作物及び畜産物への残留	1	0	2	3	0	0	0	0
生活環境動植物及び家畜に対する毒性	2	0	3	5	0	0	0	0
環境動態	0	1	8	9	0	0	1	1
合計	7	1	15	23	0	0	1	1

### 3. 海外評価機関等の評価書に引用のある文献

「公表文献の収集、選択等のためのガイドライン（令和 3 年 9 月 22 日農薬資材審議会農薬分科会決定、令和 5 年 7 月 27 日一部改正）」に基づき、海外評価機関等の評価を調査したところ、JMPR に 3 件の文献引用が認められた。表 3-1 に示すとともに別添 1 「食品安全委員会フォーマット表」に示した。

トリアゾール共通代謝物に関する評価書（JMPR）

Pesticide residues in food - 2008: toxicological evaluations

<https://apps.who.int/pesticide-residues-jmpr-database/Document/114>

表 3-1 EFSA、USEPA、JMPR の評価書に引用されている論文

リスト No.	データ 要求 (項目 番号)	著者	出版 年	論文表題	掲載誌名、号、 ページ等	評価 機関	評価書情報 (発行年等)
J001	II 5	Menegola, E., <i>et al.</i>	2001	Antifungal triazoles induce malformations in vitro.	Reproductive Toxicology 15, 421-427	JMPR	Pesticide residues in food - 2008: toxicological evaluations
J002	II 5	Wickings, E.J., <i>et al.</i>	1987	Non-steroidal inhibition of granulosa cell aromatase activity in vitro.	Journal of Steroid. Biochemistry 26, 641-646	JMPR	Pesticide residues in food - 2008: toxicological evaluations
J003	II 5	Wickramaratne, G A de S.	1987	The Chernoff-Kavlock assay: its validation and application in rats.	Teratogenesis, Carcinogenesis and Mutagenesis 7, 73-83	JMPR	Pesticide residues in food - 2008: toxicological evaluations

#### 4. 結果及び結論

トリアゾール共通代謝物について文献調査を実施した。検索期間は 2003 年 1 月 1 日～2024 年 2 月 2 日とした。化合物名等で 5 つの検索分野（物理化学的性状、ヒトに対する毒性、農作物及び畜産物への残留、生活環境動植物及び家畜に対する毒性、環境動態）で 8221 件の文献がヒットした。これらの文献に対して文献表題及び要旨を基に第 1 段階の適合性評価を行い 24 件が検索された。この 24 件について文献全文を用いた第 2 段階評価を実施し、環境動態分野における 1 件を適合性あり（区分 c）と判断した。（ただし、日本における評価では、DA②の日本の代表的な使用方法／使用条件における評価に活用できないため、適合性なしと判断できる。）また、JMPR 評価書にヒトに対する毒性に関する文献の引用が 3 件認められたため別添 1「食品安全委員会フォーマット表」に示した。

以上

別添

検討対象となる公表文献（疫学研究に関するもの以外）の一覧

No.	文献名	ジャーナル名等	公表年	著者名	著者の所属機関	書誌情報	研究分野	原著／ 総説	海外評 価書で の引用 の有無	ドシエ での 引用の 有無	<i>in vivo</i> (動物種) / <i>in vitro</i>	用量 (mg/kg体重 又は mg/kg体重/日)	NOAEL /NOEL	LOAEL /LOEL	Klimisch コード	評価の目的との適合性に関する情報	備考
1 (J001)	Antifungal triazoles induce malformations in vitro.	Reproductive Toxicology 15, 421-427	2001	Menegola, E., et al.	University of Milan, Italy	<a href="https://doi.org/10.1016/S0890-6238(01)00143-5">https://doi.org/10.1016/S0890-6238(01)00143-5</a>	生殖発生	原著	JMPR	無	<i>in vitro</i> (ラット 胚)	-	-	-	-	リスク評価に直接活用できるエンドポイントを含まないが、トリアゾール系代謝物が培養胚で催奇形性作用を示さないことが示唆された。 試験ガイドライン非準拠。	ラット培養胚を用いた催奇形性研究。
2 (J002)	Non-steroidal inhibition of granulosa cell aromatase activity in vitro.	Journal of Steroid. Biochemistry 26, 641-646	1987	Wickings, E.J., et al.	Institute of Obstetrics and Gynaecology, Hammersmith Hospital, UK	<a href="https://doi.org/10.1016/0022-4731(87)91035-1">https://doi.org/10.1016/0022-4731(87)91035-1</a>	生殖発生	原著	JMPR	無	<i>in vitro</i> (ラット 卵巣細 胞)	-	-	-	-	リスク評価に直接活用できるエンドポイントを含まないが、トリアゾール系代謝物が卵巣顆粒膜細胞で見かけ上のアロマターゼ阻害作用を示した。 試験ガイドライン非準拠。	ラット卵巣顆粒膜培養細胞におけるアロマターゼ阻害研究。
3 (J003)	The Chernoff-Kavlock assay: its validation and application in rats.	Teratogenesis, Carcinogenesis and Mutagenesis 7, 73-83	1987	Wickramaratne, G A de S.	Central Toxicology Laboratory, Imperial Chemical Industries PLC, UK	<a href="https://doi.org/10.1002/tcm.1770070110">https://doi.org/10.1002/tcm.1770070110</a>	生殖発生	原著	JMPR	無	<i>in vivo</i> (ラット)	25,100	催奇形性 なし	-	-	被験物質に関する情報がなく、リスク評価に直接活用できるエンドポイントを含まない。Chernoff-Kavlockアッセイのバリデーションのため26種類の物質で検討。トリアゾールは催奇形性を有さない物質との結果。	ラット発生毒性試験10匹/群。

Document Title

**Literature Search  
Triazole Derivative Metabolites,  
Being Common Metabolites of Triazole-Fungicides**

Data Requirements

**EU Regulation 1107/2009 & EU Regulation 283/2013  
Document MCA  
Section 9: Literature data**

According to the Guidance Document SANCO/10181/2013, for  
preparing dossiers for the approval of a chemical active substance

**Version 6**

Date

**13<sup>th</sup> May 2019**

Owner

**Triazole Metabolite Derivatives Group (TMDG)**

**BASF SE, Bayer AG, Dow AgroScience LLC,  
Isagro S.p.A, Syngenta Crop Protection AG**

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**OWNERSHIP STATEMENT**

**This document, the data contained in it and copyright therein are owned by the Triazole Derivative Metabolite Group (TDMG). No part of the document or any information contained therein may be disclosed to any third party without the prior written authorisation of the TDMG.**

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

### History

This Literature search is performed for and owned by the Triazole Derivatives Metabolite Group (TDMG), a task force consisting of five companies, BASF SE, Bayer CropScience AG, Dow AgroScience LLC Isagro S.p.A. and Syngenta Crop Protection AG. These five companies have interests in a number of parent triazole fungicide compounds. The parent triazoles have common metabolites and historically the companies have formed a cooperation to share data and avoid duplicate testing. The TDMG also license data to license holders particularly to avoid duplicate animal testing. As of 2018, Dupont is also a member under the auspices of the merger with Dow.

This Literature search was initially run in Jan 2014 and then has been updated in Jun 2015, Nov 2015, Jan 2016, Aug 2016, Mar 2018, December 2018 and Apr 2019.

Date of search 1	10 <sup>th</sup> January 2014
Date span of the search 1	2003 to 9 <sup>th</sup> January 2014
Date of search 2	10 <sup>th</sup> June 2015
Date span of the search 2	10 <sup>th</sup> January 2014 – 9 <sup>th</sup> June 2015
Date of search 3	19 <sup>th</sup> November 2015
Date span of the search 3	10 <sup>th</sup> June 2015 – 18 <sup>th</sup> November 2015
Date of search 4	20 <sup>th</sup> January 2016
Date span of the search 4	19 <sup>th</sup> November 2015 – 20 <sup>th</sup> January 2016
Date of search 5	15 <sup>th</sup> August 2016
Date span of the search 5	20 <sup>th</sup> January 2016 – 15 <sup>th</sup> August 2016
Date of search 6	19 <sup>th</sup> March 2018
Date span of the search 6	15 <sup>th</sup> August 2016 – 19 <sup>th</sup> March 2018
Date of search 7	7 <sup>th</sup> December 2018
Date span of the search 7	20 <sup>th</sup> March – 7 <sup>th</sup> December 2018
Date of search 8	10 <sup>th</sup> April 2019
Date span of the search 8	8 <sup>th</sup> December 2018 – 10 <sup>th</sup> April 2019

This document has been previously submitted to support the review of TDMG parent triazole active substances in various EU Member States as detailed below.

Date	Parent Triazole Submission	RMS
July 2014	Propiconazole	Finland
Oct 2015	Metconazole	Belgium / UK
Oct 2015	Triticonazole	Austria / UK

**Triazole Metabolite Derivatives Group (TMDG):**  
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Jan 2016	Prothioconazole	UK / France
Mar 2016	Mefentrifluconazole	UK / France
June 2016	Difenconazole	Spain / UK
February 2017	Tebuconazole Triadimenol	
June 2019	Tetraconazole Penconazole	

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## **CA 9 LITERATURE DATA**

### **CA 9.1 Title**

This document is a Literature Review Report for the four common triazole derived metabolites (1,2,4-triazole, triazole acetic acid, triazole alanine and triazole lactic acid) with data packages belonging to the Triazole Derivatives Metabolite Group (TDMG).

### **CA 9.2 Author(s) of the review**

██████████, Consultant to the TDMG and Syngenta on behalf of the Triazole Derivatives Metabolite Group (TDMG), Jealott's Hill International Research Centre, Bracknell, Berkshire RG42 6EY, UK and Bayer AG, Monheim Germany.

### **CA 9.3 Summary: A brief summary indicating the purpose of the report, the methodology employed and the results obtained**

This report summarises the search for “scientific peer-reviewed open” literature on the four common triazole metabolites 1,2,4-triazole, triazole acetic acid, triazole alanine and triazole lactic acid dealing with the following sections of the dossier, product chemistry properties, toxicology, metabolism and residues data, ecotoxicology and environmental fate data which may impact health, the environment and non-target species and published within the last ten years before the date of submission of the “parent triazole active dossier” in accordance with Article 8(5) of Regulation (EC) No. 1107/2009.

The exact search strategy is detailed in the Appendix but a summary of the methodology employed is given below and a summary of the results are also presented.

1. Dossier section by section, a very broad search was conducted in up to 16 scientific source databases (detailed in Appendix 2) for 1,2,4-triazole, triazole acetic acid, triazole alanine and triazole lactic acid using the search terms listed in Appendix 1.
2. Duplicate titles from between the data bases were automatically removed from the output.
3. A rapid assessment of the titles was conducted to remove any additional duplicates and any obviously irrelevant titles (where enough information was available from the title alone).
4. A further rapid assessment was conducted using summary abstracts and any clearly irrelevant titles were removed.
5. A detailed assessment of the full-text documents for the remaining titles was conducted using the criteria developed for study relevance.
6. Any relevant papers were highlighted and assessed for reliability.

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**Table 9.3-1: Results of study selection process**

An overview of the Product Chemistry properties results is summarised in the tables below.

Data requirement(s) captured in the search	Search 1	Search 2	Search 3	Search 4	Search 5
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	406	116	57	10	56
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	406	116	57	10	56
Total number of <i>full-text</i> documents assessed in detail*	0	0	0	0	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0	0	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

Data requirement(s) captured in the search	Search 6	Search 7	Search 8		
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	151	13	8		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	151	13	8		
Total number of <i>full-text</i> documents assessed in detail*	0	0	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

An overview of the Toxicology results is summarised in the tables below.

Data requirement(s) captured in the search	Search 1	Search 2	Search 3	Search 4	Search 5
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	791	219	98	17	66
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	791	219	98	13	66
Total number of <i>full-text</i> documents assessed in detail*	0	0	0	4	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0	4	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

<b>Data requirement(s) captured in the search</b>	<b>Search 6</b>	<b>Search 7</b>	<b>Search 8</b>		
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	261	37	16		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	261	37	16		
Total number of <i>full-text</i> documents assessed in detail*	0	0	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

An overview of the Metabolism and Residues results is summarised in the tables below.

<b>Data requirement(s) captured in the search</b>	<b>Search 1</b>	<b>Search 2</b>	<b>Search 3</b>	<b>Search 4</b>	<b>Search 5</b>
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	600	172	84	14	54
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	599	172	84	14	54
Total number of <i>full-text</i> documents assessed in detail*	1	0	0	0	1
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance**	1	0	0	0	1
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

<b>Data requirement(s) captured in the search</b>	<b>Search 6</b>	<b>Search 7</b>	<b>Search 8</b>		
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	224	66	13		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	224	66	13		
Total number of <i>full-text</i> documents assessed in detail*	0	0	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance**	0	0	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

An overview of the Ecotoxicology results is summarised in the table below.

<b>Data requirement(s) captured in the search</b>	<b>Search 1</b>	<b>Search 2</b>	<b>Search 3</b>	<b>Search 4</b>	<b>Search 5</b>
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	324	91	28	6	29
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	323	91	28	6	29
Total number of <i>full-text</i> documents assessed in detail*	1	0	0	0	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	1	0	0	0	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

<b>Data requirement(s) captured in the search</b>	<b>Search 6</b>	<b>Search 7</b>	<b>Search 8</b>		
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	133	9	5		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	133	9	5		
Total number of <i>full-text</i> documents assessed in detail*	0	1	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	1	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

An overview of the Environmental Fate results is summarised in the table below.

<b>Data requirement(s) captured in the search</b>	<b>Search 1</b>	<b>Search 2</b>	<b>Search 3</b>	<b>Search 4</b>	<b>Search 5</b>
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	1095	283	167	22	95
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	1095	283	167	22	95
Total number of <i>full-text</i> documents assessed in detail*	0	0	0	0	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0	0	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

<b>Data requirement(s) captured in the search</b>	<b>Search 6</b>	<b>Search 7</b>	<b>Search 8</b>		
Total number of <i>summary records</i> retrieved after <i>all</i> * searches of peer-reviewed literature (excluding duplicates)	348	43	18		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	348	43	18		
Total number of <i>full-text</i> documents assessed in detail*	0	0	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

**Triazole Metabolite Derivatives Group (TMDG):**  
BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

## **CA 9.4 Protocol**

### **CA 9.4.1 Statement of the objective of the review**

The review has the objective of identifying “scientific peer-reviewed open literature on 1,2,4-triazole, triazole acetic acid, triazole alanine and triazole lactic acid dealing with product chemistry, toxicology, metabolism and residue studies, ecotoxicology and environmental fate which may impact health, the environment and non-target species and published within the last ten years before the date of submission of the dossier” in accordance with Article 8(5) of Regulation (EC) No. 1107/2009.

### **CA 9.4.2 Criteria for relevance with which decisions to select studies in the dossier were made**

The list of criteria of relevance are summarised in Appendix 1, covering each section of the dossier individually. This is because each section has slightly different criteria applying.

## **CA 9.5 Search methods**

Date of search 1	10 <sup>th</sup> January 2014
Date span of the search 1	2003 to 9 <sup>th</sup> January 2014
Date of search 2	10 <sup>th</sup> June 2015
Date span of the search 2	10 <sup>th</sup> January 2014 – 9 <sup>th</sup> June 2015
Date of search 3	19 <sup>th</sup> November 2015
Date span of the search 3	10 <sup>th</sup> June 2015 – 18 <sup>th</sup> November 2015
Date of search 4	20 <sup>th</sup> January 2016
Date span of the search 4	19 <sup>th</sup> November 2015 – 20 <sup>th</sup> January 2016
Date of search 5	15 <sup>th</sup> August 2016
Date span of the search 5	20 <sup>th</sup> January 2016 – 15 <sup>th</sup> August 2016
Date of search 6	19 <sup>th</sup> March 2018
Date span of the search 6	15 <sup>th</sup> August 2016 – 19 <sup>th</sup> March 2018
Date of search 7	7 <sup>th</sup> December 2018
Date span of the search 7	20 <sup>th</sup> March – 7 <sup>th</sup> December 2018
Date of search 8	10 <sup>th</sup> April 2019
Date span of the search 8	8 <sup>th</sup> December 2018 – 10 <sup>th</sup> April 2019

Detailed Search Parameters – Search Terms for each section of the dossier are listed individually in Appendix 2.

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**CA 9.6 Results**

**Table 9.6-1: Results of the Product Chemistry study selection process**

<b>Data requirement(s) captured in the search</b>	<b>Search 1</b>	<b>Search 2</b>	<b>Search 3</b>	<b>Search 4</b>	<b>Search 5</b>
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	406	116	57	10	56
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	406	116	57	10	56
Total number of <i>full-text</i> documents assessed in detail*	0	0	0	0	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0	0	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

<b>Data requirement(s) captured in the search</b>	<b>Search 6</b>	<b>Search 7</b>	<b>Search 8</b>		
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	151	13	8		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	151	13	8		
Total number of <i>full-text</i> documents assessed in detail*	0	0	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

In the Product Chemistry search, all records were excluded as being non-relevant.

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**Table 9.6-2: Results of the Toxicology study selection process**

Data requirement(s) captured in the search	Search 1	Search 2	Search 3	Search 4	Search 5
Total number of <i>summary records</i> retrieved after <i>all</i> * searches of peer-reviewed literature (excluding duplicates)	791	219	98	17	66
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	791	219	98	13	66
Total number of <i>full-text</i> documents assessed in detail*	0	0	0	4	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0	4	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

Data requirement(s) captured in the search	Search 6	Search 7	Search 8		
Total number of <i>summary records</i> retrieved after <i>all</i> * searches of peer-reviewed literature (excluding duplicates)	261	37	16		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	261	37	16		
Total number of <i>full-text</i> documents assessed in detail*	0	0	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

For the initial rapid assessment, study titles were scanned to identify the relevance of studies for mammalian toxicology. Studies dismissed immediately included those clearly not related to toxicology and those unambiguously belonging to another section (ecotoxicology, residue data).

In some cases the title did not provide sufficient information to dismiss the reference and in these cases the abstract was checked to confirm whether the full paper should be reviewed. In search 4, 4 abstracts were further reviewed and deemed not relevant. Details are presented below.

Following the study selection process, it was concluded that there were no relevant studies which required further assessment or evaluation.

From Search 4, Reference to the paper by author and by data point and are given in Tables 9.6-2.1 and 9.6-2.2. Details of why this paper has been excluded for relevance or reliability are given in Table 9.6-2.3.

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

**Table 9.6-2.1: List of references for all relevant and unclear studies listed by data point number**

CA data point number	Author(s)	Year	Title	Source
CA 5.8.2	Kamboj Vipan K; Verma Prabhakar K; Dhanda Anu; Ranjan Sudhir	2015	1,2,4-triazole derivatives as potential scaffold for anticonvulsant activity	Central nervous system agents in medicinal chemistry, (2015) Vol. 15, No. 1, pp. 17-22. Journal code: 101269163. E-ISSN: 1875-6166. L-ISSN: 1871-5249.
CA 5.8.2	Kumar, Basavapatna; Mohana, Kikkeri; Mallesha, Lingappa	2013	Synthesis and antiproliferative activity of some new fluorinated Schiff bases derived from 1,2,4-triazoles	Journal of Fluorine Chemistry [J. Fluorine Chem.]. Vol. 156, pp. 15-20. 1 Dec 2013. ISSN: 0022-1139 DOI: 10.1016/j.jfluchem.2013.08.008 Published by: Elsevier B.V. URL (Document): <a href="http://www.sciencedirect.com/science/article/pii/S0022113913002947">http://www.sciencedirect.com/science/article/pii/S0022113913002947</a>
CA 5.8.2	Plech Tomasz; Kapron Barbara; Paneth Agata; Kosikowska Urszula; Malm Anna; Strzelczyk Aleksandra; StAczek Pawel; SwiAtek Lukasz; Rajtar Barbara; Polz-Dacewicz Malgorzata	2015	Determination of the primary molecular target of 1,2,4-triazole-ciprofloxacin hybrids	Molecules (Basel, Switzerland), (2015) Vol. 20, No. 4, pp. 6254-72. Electronic Publication Date: 9 Apr 2015. Journal code: 100964009. E-ISSN: 1420-3049. L-ISSN: 1420-3049
CA 5.8.2	Wang, Bing; Chu, Daniel; Feng, Ying; Shen, Yuqiao; Aoyagi-Scharber, Mika; Post, Leonard E.	2016	Discovery and Characterization of (8S,9R)-5-Fluoro-8-(4-fluorophenyl)-9-(1-methyl-1H-1,2,4-triazol-5-yl)-2,7,8,9-tetrahydro-3H-pyrido[4,3,2-de]phthalazin-3-one (BMN 673, Talazoparib), a Novel, Highly Potent, and Orally Efficacious Poly(ADP-ribose) Polymerase-1/2 Inhibitor, as an Anticancer Agent	Journal of Medicinal Chemistry, (2016) Vol. 59, No. 1, pp. 335-357. CODEN: JMCMAR. ISSN: 0022-2623.

**Table 9.6-2.2: List of references for all relevant and unclear studies listed by Author**

Author(s)	Year	CA data point number	Title	Source
Kamboj Vipan K; Verma Prabhakar K; Dhanda Anu; Ranjan Sudhir	2015	CA 5.8.2	1,2,4-triazole derivatives as potential scaffold for anticonvulsant activity	Central nervous system agents in medicinal chemistry, (2015) Vol. 15, No. 1, pp. 17-22. Journal code: 101269163. E-ISSN: 1875-6166. L-ISSN: 1871-5249.
Kumar, Basavapatna; Mohana, Kikkeri; Mallesha, Lingappa	2013	CA 5.8.2	Synthesis and antiproliferative activity of some new fluorinated Schiff bases derived from 1,2,4-triazoles	Journal of Fluorine Chemistry [J. Fluorine Chem.]. Vol. 156, pp. 15-20. 1 Dec 2013. ISSN: 0022-1139 DOI: 10.1016/j.jfluchem.2013.08.008 Published by: Elsevier B.V. URL (Document): <a href="http://www.sciencedirect.com/science/article/pii/S0022113913002947">http://www.sciencedirect.com/science/article/pii/S0022113913002947</a>

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

Author(s)	Year	CA data point number	Title	Source
Plech Tomasz; Kapron Barbara; Paneth Agata; Kosikowska Urszula; Malm Anna; Strzelczyk Aleksandra; StAczek Pawel; SwiAtek Lukasz; Rajtar Barbara; Polz-Dacewicz Malgorzata	2015	CA 5.8.2	Determination of the primary molecular target of 1,2,4-triazole-ciprofloxacin hybrids	Molecules (Basel, Switzerland), (2015) Vol. 20, No. 4, pp. 6254-72. Electronic Publication Date: 9 Apr 2015. Journal code: 100964009. E-ISSN: 1420-3049. L-ISSN: 1420-3049
Wang, Bing; Chu, Daniel; Feng, Ying; Shen, Yuqiao; Aoyagi-Scharber, Mika; Post, Leonard E.	2016	CA 5.8.2	Discovery and Characterization of (8S,9R)-5-Fluoro-8-(4-fluorophenyl)-9-(1-methyl-1H-1,2,4-triazol-5-yl)-2,7,8,9-tetrahydro-3H-pyrido[4,3,2-de]phthalazin-3-one (BMN 673, Talazoparib), a Novel, Highly Potent, and Orally Efficacious Poly(ADP-ribose) Polymerase-1/2 Inhibitor, as an Anticancer Agent	Journal of Medicinal Chemistry, (2016) Vol. 59, No. 1, pp. 335-357. CODEN: JMCMAR. ISSN: 0022-2623.

A detailed review of the full-text documents identified in Table 9.6-3.3 resulted in the additional exclusion of the following study from the dossier.

CA data point number	Author(s)	Year	Title	Source	Reason(s) for not including the study in the dossier
CA 5.8.2	Kamboj Vipin K; Verma Prabhakar K; Dhanda Anu; Ranjan Sudhir	2015	1,2,4-triazole derivatives as potential scaffold for anticonvulsant activity	Central nervous system agents in medicinal chemistry, (2015) Vol. 15, No. 1, pp. 17-22. Journal code: 101269163. E-ISSN: 1875-6166. L-ISSN: 1871-5249.	Considered not relevant as no new data are presented and does not change our understanding of 1,2,4-triazole.
CA 5.8.2	Kumar, Basavapatna; Mohana, Kikkeri; Mallesha, Lingappa	2013	Synthesis and antiproliferative activity of some new fluorinated Schiff bases derived from 1,2,4-triazoles	Journal of Fluorine Chemistry [J. Fluorine Chem.]. Vol. 156, pp. 15-20. 1 Dec 2013. ISSN: 0022-1139 DOI: 10.1016/j.jfluchem.2013.08.008 Published by: Elsevier B.V. URL (Document): <a href="http://www.sciencedirect.com/science/article/pii/S0022113913002947">http://www.sciencedirect.com/science/article/pii/S0022113913002947</a>	Considered not relevant as no new data are presented and does not change our understanding of 1,2,4-triazole.

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

CA data point number	Author(s)	Year	Title	Source	Reason(s) for not including the study in the dossier
CA 5.8.2	Plech Tomasz; Kapron Barbara; Paneth Agata; Kosikowska Urszula; Malm Anna; Strzelczyk Aleksandra; StAczek Pawel; SwiAtek Lukasz; Rajtar Barbara; Polz-Dacewicz Malgorzata	2015	Determination of the primary molecular target of 1,2,4-triazole-ciprofloxacin hybrids	Molecules (Basel, Switzerland), (2015) Vol. 20, No. 4, pp. 6254-72. Electronic Publication Date: 9 Apr 2015. Journal code: 100964009. E-ISSN: 1420-3049. L-ISSN: 1420-3049	Considered not relevant as no new data are presented and does not change our understanding of 1,2,4-triazole.
CA 5.8.2	Wang, Bing; Chu, Daniel; Feng, Ying; Shen, Yuqiao; Aoyagi-Scharber, Mika; Post, Leonard E.	2016	Discovery and Characterization of (8S,9R)-5-Fluoro-8-(4-fluorophenyl)-9-(1-methyl-1H-1,2,4-triazol-5-yl)-2,7,8,9-tetrahydro-3H-pyrido[4,3,2-de]phthalazin-3-one (BMN 673, Talazoparib), a Novel, Highly Potent, and Orally Efficacious Poly(ADP-ribose) Polymerase-1/2 Inhibitor, as an Anticancer Agent	Journal of Medicinal Chemistry, (2016) Vol. 59, No. 1, pp. 335-357. CODEN: JMCMAR. ISSN: 0022-2623.	Considered not relevant as no new data are presented and does not change our understanding.

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**Table 9.6-3: Results of Metabolism and Residue study selection process**

Data requirement(s) captured in the search	Search 1	Search 2	Search 3	Search 4	Search 5
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	600	172	84	14	54
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	599	172	84	14	54
Total number of <i>full-text</i> documents assessed in detail*	1	0	0	0	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	1	0	0	0	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

Data requirement(s) captured in the search	Search 6	Search 7	Search 8		
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	224	66	13		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	224	66	13		
Total number of <i>full-text</i> documents assessed in detail*	0	0	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

Following exclusion of references from the rapid assessment, the full text was assessed from the 1 remaining paper resulted in it being identified as not relevant and therefore this title could be excluded.

Full details of this paper are given in the tables below.

Reference to the paper by author and by data point and are given in Tables 9.6-3.1 and 9.6-3.2. Details of why this paper has been excluded for relevance or reliability are given in Table 9.6-3.3.

**Table 9.6-3.1: List of references for all relevant and unclear studies listed by data point number**

CA data point number	Author(s)	Year	Title	Source
6.5.3	Lennon SF, Reighard GL, Schermerhorn P, Podhorniak L, Horton D	2006	Profiling Presence and Concentration of Eighteen Pesticide Residues through a Commercial Canning Process	Acta Horticulturae 713, 409-416

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**Table 9.6-3.2: List of references for all relevant and unclear studies listed by Author**

<b>Author(s)</b>	<b>Year</b>	<b>CA data point number</b>	<b>Title</b>	<b>Source</b>
Lennon SF, Reighard GL, Schermerhorn P, Podhorniak L, Horton D	2006	6.5.3	Profiling Presence and Concentration of Eighteen Pesticide Residues through a Commercial Canning Process	Acta Horticulturae 713, 409-416

A detailed review of the full-text documents identified in Table 9.6-3.3 resulted in the additional exclusion of the following study from the dossier.

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

**Table 9.6-3.3: List of references excluded following detailed review listed by data point number**

CA data point number	Author(s)	Year	Title	Source	Reason(s) for not including the study in the dossier
6.5.3	Lennon SF, Reighard GL, Schermerhorn P, Podhorniak L, Horton D	2006	Profiling Presence and Concentration of Eighteen Pesticide Residues through a Commercial Canning Process	Acta Horticulturae 713, 409-416	<p>The aim of this study was to investigate the fate of pesticides, including 1,2,4-triazole, triazole alanine and triazole acetic acid, during the canning of peaches. Samples of peaches were sourced from commercial growers. No residues of 1,2,4-triazole were detected in whole, peeled or canned peaches. Residues of triazole alanine and triazole acetic acid were identified in all commodities and showed a decline of over 75% from the whole peaches into canned peaches.</p> <p>This paper is not considered relevant because</p> <ul style="list-style-type: none"> <li>- There is no record of the treatment the peaches received in the field</li> <li>- The levels of triazole alanine and triazole acetic acid reported in canned peaches are 7.6 and 3.7 ppb respectively which are below the validated limit of quantification of the method (25 ppb)</li> <li>- These results show a significant reduction in residues during processing. Since the TDMG dietary risk assessment for the triazole metabolites assumes no reduction in residues on processing of any crop commodity, and demonstrates large margins of safety, this paper is not required to refine the risk assessment</li> </ul>

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**Table 9.6-4: Results of Ecotoxicology study selection process**

Data requirement(s) captured in the search	Search 1	Search 2	Search 3	Search 4	Search 5
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	324	91	28	6	29
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	323	91	28	6	29
Total number of <i>full-text</i> documents assessed in detail*	1	0	0	0	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance**	1	0	0	0	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

Data requirement(s) captured in the search	Search 6	Search 7	Search 8		
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	133	9	5		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	133	9	5		
Total number of <i>full-text</i> documents assessed in detail*	0	1	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance**	0	1	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

Following exclusion of references from the rapid assessment, the remaining study titles were scanned to identify whether the studies were indeed relevant to ecotoxicology or not – for example, any studies clearly not in the remit of the European review (such as studies about Brazilian species); or unambiguously belonging to other sections such as environmental fate or efficacy (the majority of the references found), were excluded. There are now two papers where the full text was assessed and resulted in being identified as not relevant and therefore both titles could also be excluded.

Reference to the papers by author and by data point and are given in Tables 9.6-4.1 and 9.6-4.2. Details of why these papers have been excluded for relevance or reliability are given in Table 9.6-4.3.

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**Table 9.6-4.1: List of references for all relevant and unclear studies listed by data point number**

CA data point number	Author(s)	Year	Title	Source	Ref. ID
CA 8.2.6	Ambrožová, Jana; Macák, Jan	2006	The influence of anti-corrosion compounds on algal growth	Algological Studies, Volume 120, Number 1, July 2006, pp. 107-113	310
CA 8.10	El Azhari N, Dermou E, Barnard R L, Stork V, Tourna M, Beguet J, Karas P A, Lucini L, Rouard N, Botteri L, Ferrari F, Trevisan M, Karpouzas D G, Martin-Laurent F.	2018	The dissipation and microbial ecotoxicity of tebuconazole and its transformation products in soil under standard laboratory and simulated winter conditions	The Science of the Total Environment Vol.637-638, pp 892-906	

**Table 9.6-4.2: List of references for all relevant and unclear studies listed by Author**

Author(s)	Year	CA data point number	Title	Source	Ref. ID
Ambrožová, Jana; Macák, Jan	2006	CA 8.2.6	The influence of anti-corrosion compounds on algal growth	Algological Studies, Volume 120, Number 1, July 2006, pp. 107-113	310
El Azhari N, Dermou E, Barnard R L, Stork V, Tourna M, Beguet J, Karas P A, Lucini L, Rouard N, Botteri L, Ferrari F, Trevisan M, Karpouzas D G, Martin-Laurent F.	2018	CA 8.10	The dissipation and microbial ecotoxicity of tebuconazole and its transformation products in soil under standard laboratory and simulated winter conditions	The Science of the Total Environment Vol.637-638, pp 892-906	

A detailed review of the full-text documents identified in Table 9.6-4.3 resulted in the additional exclusion of the following studies from the dossier as non-relevant.

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

**Table 9.6-4.3: List of references excluded following detailed review listed by data point number**

CA data point number	Author(s)	Year	Title	Source	Reason(s) for not including the study in the dossier	Ref. ID
CA 8.2.6	Ambrožová, Jana; Macák, Jan	2006	The influence of anti-corrosion compounds on algal growth	Algological Studies, Volume 120, Number 1, July 2006, pp. 107-113	Does not meet criterion 1 (poorly defined test item). No analytical verification of test item concentrations. Study also fails to meet criteria 9 and 10, as there is insufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust, and the study did not follow a recommended protocol. The study duration was 192 hr, considerably longer than the more typical duration of 72 or 96 hr, for green algae.	310
CA 8.10	El Azhari N, Dermou E, Barnard R L, Stork V, Tourna M, Beguet J, Karas P A, Lucini L, Rouard N, Botteri L, Ferrari F, Trevisan M, Karpouzas D G, Martin-Laurent F.	2018	The dissipation and microbial ecotoxicity of tebuconazole and its transformation products in soil under standard laboratory and simulated winter conditions	The Science of the Total Environment Vol.637-638, pp 892-906	The aim of this study was to investigate the dissipation and microbial toxicity of the parent triazole fungicide tebuconazole. Breakdown metabolites were detected and identified. There was no correlation between the metabolites and ecotoxicology of the triazole metabolites of relevance.  This paper is not considered relevant because any effects on soil microorganisms cannot be clearly attributed to triazole metabolites (which are observed, but at levels below the LoQ). In addition, they were seen in control samples as well as in the test formulation samples.	

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**Table 9.6-5: Results of Environmental Fate study selection process**

<b>Data requirement(s) captured in the search</b>	<b>Search 1</b>	<b>Search 2</b>	<b>Search 3</b>	<b>Search 4</b>	<b>Search 5</b>
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	1095	283	167	22	95
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	1095	283	167	22	95
Total number of <i>full-text</i> documents assessed in detail*	0	0	0	0	0
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0	0	0
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

\*both from bibliographic databases and other sources of peer-reviewed literature

<b>Data requirement(s) captured in the search</b>	<b>Search 6</b>	<b>Search 7</b>	<b>Search 8</b>		
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	348	43	18		
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance	348	43	18		
Total number of <i>full-text</i> documents assessed in detail*	0	0	0		
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0		
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0		

\*both from bibliographic databases and other sources of peer-reviewed literature

Following the study selection process, it was concluded that there were no relevant studies which required further assessment or evaluation.

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## **Overall Conclusion of Results**

No relevant studies or papers were found from all the searches performed on the common triazole metabolites to date. Those papers warranting further attention were examined in detail and also assessed to be non-relevant.

Copies of non-relevant papers can be supplied on request.

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## Appendix 1 Criteria for relevance

### Appendix 1.1: List of Criteria for relevance for Product Chemistry studies

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
Physical and chemical properties (CA 2.1 to 2.15)	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust (e.g. pre-treatment details, characterisation of physico-chemical parameters, replication, statistical methods, and appropriate sampling regime).</li> <li>3. Study conditions should not differ significantly from recommended protocols* and internationally agreed tests methods (CIPAC MT and OECD methods).</li> <li>4. Study conditions should not interfere with the interpretation of the study results.</li> <li>5. End-points or positions stated as a result of the study significantly affect the proposed risk assessment in the dossier.</li> </ol>

### Table Appendix 1.2: List of Criteria for relevance for toxicological and toxicokinetic studies

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
*CA 5.1 ADME studies	<ol style="list-style-type: none"> <li>1. Well identified test material including purity and impurity profile</li> <li>2. Relevant test species e.g. rodent – rat/mouse – non-rodent – dog</li> <li>3. Relevant endpoint e.g. ADME measurement or metabolite identification</li> <li>4. Well described condition of the test and quantitative assessment of results to substantiate and evaluate whether the study conclusions and endpoints are robust</li> </ol>
*CA 5.2 Acute toxicity	<ol style="list-style-type: none"> <li>1. Well identified test material including purity and impurity profile</li> <li>2. Test species likely to be relevant to mammalian toxicology assessment – rats and mice, rabbit, guinea pig</li> <li>3. Relevant route of administration for risk assessment</li> <li>4. Describe observations, examinations, analyses performed or necropsy</li> <li>5. Different outcome to those studies currently reported</li> </ol>
*CA 5.4 Genotoxicity	<ol style="list-style-type: none"> <li>1. Well identified test material including purity and impurity profile</li> <li>2. Relevant cell line or species used</li> <li>3. “validated” or widely used test method</li> <li>4. In vitro observation not addressed by in vivo data (including tissue specific effects)</li> <li>5. In vivo effect in somatic or germs cells in relevant species</li> <li>6. Relevant route of exposure to test substance</li> <li>7. Contradicts submitted studies, impacts WoE.</li> <li>8. Recognised methods for scoring studies outcomes used where applicable</li> </ol>
*CA 5.3, 5.5, 5.6, 5.7, 5.8.1 Short term, chronic, reproductive and neurotoxicity, studies on metabolites	<ol style="list-style-type: none"> <li>1. Well identified test material including purity and impurity profile</li> <li>2. Test species likely to be relevant to mammalian toxicology assessment – rodents rats and mice, non- rodent dog is preferred</li> <li>3. Sufficient number of animals per group to establish statistical significance</li> <li>4. Test several dose levels (minimum 3)</li> <li>5. Relevant route of administration for risk assessment</li> <li>6. Include negative control (preferable)</li> <li>7. Establish dose response</li> <li>8. Describe observations, examinations, analyses performed or necropsy</li> <li>9. Contradicts submitted studies and/or changes key endpoints</li> </ol>

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Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
CA 5.8.2 Supplementary studies on the active substance	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. Unusual routes of exposure acceptable as they may introduce important information on other possible toxicological effects</li> <li>3. Regulatory use usually limited to addressing species sensitivity /safety factors etc.</li> <li>4. Examples of studies               <ol style="list-style-type: none"> <li>a. Effects of combined exposures</li> <li>b. Hormonal effects (if not guideline studies or included in 5.8.3)</li> <li>c. Hypersensitivity of specific sub-populations</li> <li>d. Gender and age variation in susceptibility (if not included in 5.6 Reproductive studies)</li> <li>e. Mode of action investigations</li> </ol> </li> </ol>
CA 5.8.3 Endocrine disrupting properties	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. All studies considered relevant at this stage – need to be checked for reliability</li> </ol>
CA 5.9 Medical data (including epidemiology) CP 7.2 to 7.4	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. All records considered relevant at this stage - need to be checked for reliability</li> </ol>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

**Table Appendix 1.3: List of Criteria for relevance for Metabolism and Residues**

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
<b>Metabolism and residues data (CA 6.1 to 6.9)</b>	
<b>Summary</b>	<p>The relevance criteria applied to determine whether a literature reference was relevant for the residues and metabolism sections of the active substance renewal process are given below.</p> <ol style="list-style-type: none"> <li>1. Well defined test material. e.g. are purity and batch data provided?</li> <li>2. Applicable test species. e.g. is the crop a representative use; were relevant animal commodities used?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. did the study meet the relevant guidelines?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants e.g. was the compound used previously at the trial site; was the animal feed free from the compound?</li> <li>5. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. were storage intervals recorded; are weather conditions and plot histories available?</li> <li>6. Validated Analytical methodology employed. e.g. were control samples used, acceptable recoveries obtained, clear example chromatograms given?</li> <li>7. Study conditions do not interfere with the interpretation of the study results. e.g. starting processing material residue is robust and there is measurable residue in processed products?</li> </ol>
<b>CA 6.1 Storage Stability of Residues (plant and animal)</b>	<p><u>Storage Stability Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material. e.g. are purity and batch data provided?</li> <li>2. Applicable test species. e.g. is the crop a representative use; were relevant animal commodities used?</li> </ol>

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Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<ol style="list-style-type: none"> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols, and must be relevant to those in the submission. e.g. did the study meet the relevant guidelines and GAP?</li> <li>4. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. were storage intervals recorded; are weather conditions and plot histories available?</li> <li>5. Validated analytical methodology employed e.g. were control samples used, acceptable recoveries obtained, clear example chromatograms given?</li> <li>6. Study conditions do not interfere with the interpretation of the study results. e.g. starting processing material residue is robust and there is measurable residue in processed products?</li> </ol>
<p><b>CA 6.2 Metabolism, distribution and Expression of Residues (plant and animal)</b></p> <p><b>CA 6.6.2 Metabolism and Distribution in Succeeding Crops</b></p>	<ol style="list-style-type: none"> <li>1. Well defined test material. e.g. if radiolabelled material was used, was an appropriate isotope used?</li> <li>2. Applicable test species. e.g. ruminant, poultry, etc.?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols, and must be relevant to those in the submission. e.g. is the application rate relevant and equivalent to maximum seasonal rate on rotated crops?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants e.g. is plot history supplied?</li> <li>5. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. Were metabolites identified by appropriate techniques?</li> <li>6. Validated analytical methodology employed. e.g. were representative clear chromatograms provided to support metabolite identification?</li> <li>7. Study conditions do not interfere with the interpretation of the study results. e.g. if the test item is photolabile was the study conducted outdoors?</li> </ol>
<p><b>CA 6.3 Magnitude of Residues Trials in Plants</b></p>	<p>Published monitoring reports were not considered relevant due to the fact that it would not be possible to determine whether or not a misuse scenario had resulted in the residue levels reported.</p> <p><u>Crop Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Applicable test species</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols.</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>6. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</li> <li>7. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Notes for above criteria</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content) e.g. was the formulation comparable to the proposed representative formulation?</li> <li>2. Applicable test species e.g. is it a representative use crop?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. Is the GAP relevant? Correct rate, application method, interval, PHI, spray volume, BBCH (if applicable), region, indoor/outdoor, control samples taken? e.g. were weather details available?</li> </ol>

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Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<p>e.g. were the control plots well separated from treated plots?  e.g. was the field phase conducted according to GLP?  e.g. were samples stored deep frozen? Were appropriate numbers of samples taken, e.g. 2kg of apples?  e.g. was appropriate sampling methodology employed? Was the sample handling traceable?</p> <p>4. Trial site/test system not previously exposed to the test material or other contaminants.  e.g. Plot history supplied, e.g. evidence that compound not used that year or previous year, and information on other plant protection products (e.g. to check for common metabolites).</p> <p>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.  Examples as in 3 above and also, have they proposed an endpoint, e.g. MRL, what statistical methods have they used for this?</p> <p>6. Study conditions should not interfere with the interpretation of the study results.</p> <p>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.  e.g. Was a validated method used, were acceptable recoveries obtained, were control samples analysed, were control samples 'clean', were representative clear chromatograms provided, Was the analytical phase conducted according to GLP? Were all components of the residue definition analysed for? Were samples analysed within a time period covered by storage stability data?</p>
<p><b>CA 6.4 Livestock Feeding Studies</b></p>	<p>Same criteria as for crop studies, examples could be as above with the following additions.  <u>Livestock Feeding Studies Notes</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Applicable test species  e.g. Ruminant, poultry, pig, fish, any edible animal.</li> <li>3. Study conditions should not differ significantly from recommended protocols.  e.g. is the dosing level extreme?   e.g. was the application form appropriate, e.g. capsule?   e.g. was the number of test species correct, e.g. three cows, nine hens?   e.g. was the dosing period appropriate, e.g. minimum 28 days?   e.g. were control animals included?   e.g. were the animals healthy?   e.g. were the animals acclimatized?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants.  e.g. is it clear that additional animal feed did not contain treated substance?</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>6. Study conditions should not interfere with the interpretation of the study results.</li> <li>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</li> </ol>
<p><b>CA 6.5 Effects of Processing</b></p>	<p><u>High Temperature Hydrolysis</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)  e.g. if radiolabelled test item was used, was an appropriate isotope used (e.g.</li> </ol>

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Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<p><sup>14</sup>C and <u>not</u> <sup>3</sup>H)?</p> <p>e.g. if radiolabelled test item was used, was the labelling position(s) appropriate to capture potential metabolites?</p> <p>e.g. if radiolabelled test item was used, was the specific activity adequate to meet an LOQ of 0.01 mg/kg?</p> <p>N.B. If water solubility of test item is &lt; 0.01 mg/L then no study is required and can be deemed non-relevant</p> <ol style="list-style-type: none"> <li>2. Applicable test system e.g. Was the test undertaken in a <u>sterilised</u> buffer medium?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. Were the temperature and pH conditions applied typical of processing operations carried out on commodities relevant to the test item? e.g. were samples stored deep frozen?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust. Examples as in 3 above e.g. Were metabolites identified by appropriate techniques (e.g. co-chromatography with known standards using two dissimilar chromatographic systems or by techniques capable of positive structural identification e.g. MS, NMR)?</li> <li>6. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc. e.g. Were relevant control experiments carried out when harsher techniques (e.g. acid/base hydrolysis) were used to identify metabolites (i.e. to ensure metabolites identified are not merely artefacts)? e.g. were representative clear chromatograms provided to support metabolite identification? e.g. where sample analysis exceeded 6 months from sample collection was storage stability of samples demonstrated?</li> <li>7. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Field Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Applicable test species</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols.</li> <li>4. Trial site not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>6. Study conditions should not interfere with the interpretation of the study results.</li> <li>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</li> </ol>
<b>CA 6.6 Residues in Rotational crops</b>	Same criteria as for crop residue studies, examples could be subtly different, e.g. acceptable PBIs, crop types, again monitoring information should not be considered relevant.
<b>CA 6.7 Proposed residue definition and MRLs</b>	Residue definition would only be affected if data generated in another section, e.g. metabolism/tox. MRLs would only be affected if residues generated and this is covered under 6.3.
<b>CA 6.8 Proposed Safety Intervals</b>	Not required. Any animal safety reports that might affect withholding periods would

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Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	be covered in the review of literature in the Toxicology Section.
<b>CA 6.9 Risk Assessment</b>	Not required – any adverse findings for the risk assessment will have to be due to a data point from one of the other sections, and are therefore covered in other sections of this document.
<b>CA 6.10 Other Studies</b>	Not required.

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

**Table Appendix 1.4: List of Criteria for relevance for Ecotoxicology studies**

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
Ecotoxicological studies (CA 8.1 to 8.9)	<p><u>Laboratory Studies</u></p> <ol style="list-style-type: none"> <li>6. Well defined test material (including purity/content)</li> <li>7. Number of organisms per group sufficient to establish a statistical significance</li> <li>8. Applicable test species</li> <li>9. Test organisms are not previously exposed to the test material or other contaminants</li> <li>10. Several dose levels tested, at least 3, including a negative control, to establish a dose-response, unless the study design is specifically a limit test. Control must be run concurrently with treatments and mortality to be within test validity criteria.</li> <li>11. Exposure route is clearly defined, is environmentally relevant and, if appropriate, suitably quantified.</li> <li>12. If conducted, analytical confirmation of dosing or sufficient information provided to determine concentrations were within acceptable range (e.g. 80-120%) of nominal targets.</li> <li>13. Effects are related to single test item, and a quantitative relationship exists between the reported endpoint and risk assessment endpoints of growth, mortality, behaviour and/or reproduction.</li> <li>14. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>15. Study conditions should not differ significantly from recommended protocols.</li> <li>16. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Field Studies</u></p> <ol style="list-style-type: none"> <li>17. Appropriate and relevant geoclimatic conditions (setting), appropriate application method and rates (exposure) and observation data (biological relevance) to derive endpoints.</li> <li>18. Well defined test material (including purity/content)</li> <li>19. Applicable test species</li> <li>20. Exposure route is clearly defined, is environmentally relevant and, if appropriate, suitably quantified.</li> <li>21. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust (e.g. pre-treatment details, characterisation of physico-chemical parameters, replication, statistical methods and appropriate sampling regime).</li> <li>22. Study conditions should not differ significantly from recommended protocols, if available for field study.</li> </ol> <p>Study conditions should not interfere with the interpretation of the study results</p>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

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**Table Appendix 1.5: List of Criteria for relevance for Environmental Fate**

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
Route and rate of degradation in soil –  Laboratory Studies – aerobic and anaerobic, parent and metabolites  CA 7.1.1  CA 7.1.1.1  CA 7.1.1.2	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Soil(s) must be agricultural and relevant for the EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 307)</li> <li>3. Soil collection, preparation and storage did not differ significantly from recommended protocols</li> <li>4. Test soils had not previously been exposed to the test material or structural analogues.</li> <li>5. Experimental conditions did not differ significantly from recommended protocols e.g. temperature and moisture</li> <li>6. Application rate is within the range of the proposed use and can be verified from the data (time zero samples)</li> <li>7. Sufficient number of samples taken to determine kinetics (minimum 5)</li> <li>8. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods</li> <li>9. Analytical method well described, LOD/LOQ at appropriate level</li> <li>10. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%.</li> <li>11. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> <li>12. Identification of ‘new’ metabolites is robust with appropriate details of method used</li> <li>13. Anaerobic conditions are verified by measurement</li> </ol>
Route and rate of degradation in soil –  Field Studies  CA 7.1.2.2	<ol style="list-style-type: none"> <li>1. In addition to criteria under laboratory route and rate:</li> <li>2. Field site(s) must be geoclimatically relevant for the EU</li> <li>3. Adequate weather data available to verify relevance of study</li> <li>4. Application technique relevant to proposed use (foliar, ST granule etc)</li> <li>5. Sufficient sampling detail and description of sample handling prior to analysis</li> <li>6. Initial and procedural recoveries are adequate to support the conclusions, e.g. 70-120%.</li> </ol>
Soil photolysis  CA 7.1.1.3	In addition to criteria under laboratory route and rate:  <ol style="list-style-type: none"> <li>1. Light source was suitable with details of spectrum and intensity available</li> <li>2. Dark control included and reported</li> </ol>
Mobility studies  Adsorption, desorption – parent and metabolites  CA 7.1.3  Column or TLC leaching  CA 7.1.4.1.1, CA 7.1.4.1.2	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Soil(s) must be agricultural and relevant for EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 106)</li> <li>3. Soil collection, preparation and storage did not differ significantly from recommended protocols</li> <li>4. Test soils had not previously been exposed to the test material or structural analogues.</li> <li>5. Experimental conditions did not differ significantly from recommended protocols</li> <li>6. Application rate is appropriate to the proposed use and can be verified from the data</li> <li>7. Sufficient number of samples taken to determine isotherm (if done)</li> <li>8. Stability of the test item in the system was demonstrated</li> <li>9. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods</li> <li>10. Mass balance or recovery for radiolabelled and unlabelled studies</li> </ol>

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Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
	<p>respectively is adequate to support the conclusions, e.g. &gt;90%</p> <ol style="list-style-type: none"> <li>11. Analytical method well described, LOD/LOQ at appropriate level</li> <li>12. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> </ol>
<p>Lysimeter studies</p> <p>CA 7.1.4.2</p>	<p>In addition to criteria under laboratory route and rate:</p> <ol style="list-style-type: none"> <li>1. Field site(s) must be geoclimatically relevant for the EU</li> <li>2. Adequate weather data available to verify relevance of study. Combined rainfall/irrigation sufficient to meet guideline requirements</li> <li>3. Minimum 1 m depth soil monolith</li> <li>4. Study continued for sufficient years to support the conclusions</li> </ol>
<p>Field leaching</p> <p>CA 7.1.4.3.</p>	<p>In addition to criteria under laboratory route and rate:</p> <ol style="list-style-type: none"> <li>1. Field site(s) must be geoclimatically relevant for the EU</li> <li>2. Adequate weather data and groundwater data (depth, direction) available to verify the validity of study</li> <li>3. Installation and operation of lysimeters and/or wells and samplers follows recommended protocols</li> <li>4. Study continued for sufficient years to support the conclusions</li> </ol>
<p>Hydrolysis</p> <p>CA 7.2.1</p>	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Experimental conditions should not differ significantly from recommended protocols</li> <li>3. Application rate is within an acceptable the range (e.g. consider solubility) and can be verified from the data (time zero samples)</li> <li>4. Sufficient number of samples taken to determine kinetics (minimum 5)</li> <li>5. Analytical method well described, LOD/LOQ at appropriate level</li> <li>6. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%.</li> <li>7. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> <li>8. Identification of 'new' metabolites is robust with appropriate details of method used</li> </ol>
<p>Aqueous photolysis</p> <p>CA 7.2.1.2</p>	<p>In addition to criteria under hydrolysis:</p> <ol style="list-style-type: none"> <li>1. Light source was suitable with details of spectrum and intensity available</li> <li>2. Dark control included and reported</li> </ol>
<p>Degradation in aquatic systems</p> <p>CA 7.2.2</p>	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Water(s) and sediment(s) must be from an agricultural area and relevant for the EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 308)</li> <li>3. Water/sediment collection, preparation and storage do not differ significantly from recommended protocols</li> <li>4. Experimental conditions do not differ significantly from recommended protocols e.g. temperature and aeration</li> <li>5. Application rate is within the range of the proposed use and can be verified from the data (time zero samples)</li> <li>6. Sufficient number of samples taken to determine kinetics (minimum 5)</li> <li>7. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods</li> <li>8. Analytical method well described, LOD/LOQ at appropriate level</li> <li>9. Analytical method appears robust with suitable reproducibility and</li> </ol>

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Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
	<p>supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</p> <p>10. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%</p> <p>11. Identification of 'new' metabolites is robust with appropriate details of method used</p> <p>12. Anaerobic conditions are verified by measurement</p>
<p>Degradation in the saturated zone</p> <p>CA 7.2.3</p>	<p>1. For laboratory studies refer to criteria under laboratory route and rate</p> <p>2. Field site(s) must be geoclimatically relevant for the EU</p> <p>3. Adequate site characterisation data available e.g. soils, geology, hydrology</p> <p>4. Installation of samplers e.g. wells, lysimeters follows recommended protocols</p> <p>5. Analytical method well described, LOD/LOQ at appropriate level</p> <p>6. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</p>
<p>Route and rate of degradation in air</p> <p>CA 7.3.1</p>	<p>1. Experimental conditions or calculations differ significantly from recommended protocols</p> <p>2. Analytical method well described, LOD/LOQ at appropriate level</p> <p>3. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</p>
<p>Monitoring</p> <p>CA 7.5</p>	<p>1. Site(s) or areas must be geoclimatically relevant for the EU</p> <p>2. Adequate site characterisation data available e.g. soils, geology, hydrology</p> <p>3. Installation of samplers e.g. wells, lysimeters follows recommended protocols OR adequate description of wells is available (depth of well, length of screen, depth of screen opening, depth of groundwater)</p> <p>4. Appropriate sampling methodology.</p> <p>5. Analytical method well described, LOD/LOQ at appropriate level</p> <p>6. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. suitable blank controls included</p> <p>7. For surface water: description of sampling methodology and handling of detects (peaks, interpolated time-step?), linked to rainfall intensity and volume). Discharge volumes, catchment drained area.</p>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

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## Appendix 2 Detailed Search Parameters for each named Dossier section

### Appendix 2.1 Product Chemistry

**Table 2.1.1: Detailed Search Parameters for Product Chemistry studies (CA 2.1 to 2.15)**

Search Strategy	
Chemical Names:	
1,2,4-Triazole (CAS: 288-88-0)	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE ((VAPOUR OR VAPOR) (3A) PRESSURE?) OR SOLUBILITY?)
L2	QUE ((PARTITION(3A) COEFF?) OR EXPLOSIV? OR OXIDI!ING?)
L3	QUE (OXIDI!ED? OR FLAMMAB? OR (FLASH(3A) POINT?))
L4	QUE (VOLATIL? OR VISCOS? OR VISCOUS? OR (LOG(W)KOW))
L5	QUE (VAPORI!AT? OR VAPOURI!AT? OR VAPOR!ED? OR VAPOURI!ED?)
L6	QUE ((SPECIFIC(3A) GRAVITY?) OR ((MELTING OR BOILING) (2W) POINT))
L7	QUE (EVAPORAT? OR DENSITY OR LOGP OR (LOG(W)P) OR KOC)
L8	QUE ((DIFFUSION(3A) COEFF?) OR (DISSOCI?(3A) CONSTANT?))
L9	QUE (ANTIINFLAMM? OR ANTIIGNIT? OR IGNIT? OR COMBUST?)
L10	QUE ((L1 OR L2 OR L3) OR (L4 OR L5 OR L6) OR (L7 OR L8 OR L9))

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**Table 2.1.2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.	
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)	
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.	
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.	
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.	
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.	

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Provider	Database	Justification	Limits applied
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily	
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.	
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)	
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.	
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly	
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.	

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Provider	Database	Justification	Limits applied
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly. (Searches 1-5 only)	
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.	
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.	

\* Total number of summary records retrieved after removing duplicates

**Table 2.1.3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.1.4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.1.5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

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## Appendix 2.2 Toxicology

**Table 2.2.1: Detailed Search Parameters for Toxicological and Toxicokinetic studies (CA 5.1 to 5.9)**

Search Strategy	
Chemical Names:	
1,2,4-Triazole (CAS: 288-88-0)	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE (MUTAG? OR CANCER? OR TERATO? OR GENETOX? OR CARCIN?)
L2	QUE (TUMOUR? OR TUMOR? OR CYTOTOX? OR GENOTOX? OR MELANOM?)
L3	QUE (NEUROTOXI? OR LD50 OR IC50 OR ((LD OR IC)(W)50))
L4	QUE (((LONG OR SHORT)(W)TERM?)(L)(EFFECT? OR STUD? OR TOXIC?))
L5	QUE (ENDOCRIN? OR INHALAT? OR IRRITAT? OR REPROTOX?)
L6	QUE (PERCUTANEOU? OR DERMAL? OR ORAL? OR INTOXICAT? OR INGEST?)
L7	QUE (((REPRODUCT? OR EMBRYO? OR FOET? OR DEVELOP?)(5A)TOXI?))
L8	QUE ((ACUTE? OR CHRONIC?)(5A)(EFFECT? OR TOXIC? OR TOXIN#))
L9	QUE (GIRL# OR CHILD OR CHILDREN OR PATIENT# OR HUMAN# OR MAN)
L10	QUE (MEN OR WOM!N OR BOY# OR WORKER# OR OPERATOR# OR FARMER#)
L11	QUE (APPLICATOR# OR PERSONNEL? OR WORKFORCE OR EMPLOYEE#)
L12	QUE (MAMMAL? OR RODENT# OR RAT OR RATS OR MOUSE OR MICE)
L13	QUE (ACCIDENT? OR POISON? OR ALLERG? OR EXPOSURE? OR EXPOSE#)
L14	QUE (OCCUPAT? OR EPIDEMIOL? OR SENSITIZ? OR SENSITIS?)
L15	QUE ((HEALTH OR ADVERSE)(5A)(EFFECT# OR RISK#))
L16	QUE (MEDICAL OR (FIRST(W)AID) OR (TOXIC?(3A)STUD?) OR THERAPE?)
L17	QUE (TOXICOKINETIC# OR EXTRACTAB? OR (RADIO(W)LABEL?))
L18	QUE (DOG# OR (GUINEA(W)PIG#) OR RABBIT# OR SKIN? OR EYE#)
L19	QUE (HAND# OR DERMAL? OR BYSTANDER# OR RESIDENT#)
L20	QUE ((ROTAT? OR SUCCEEDING OR FOLLOWING)(3A)CROP#)
L21	QUE ((DIETARY OR CONSUM? OR CUMULAT? OR AGGREGAT?)(5A)RISK?)

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Search Strategy	
L22	QUE (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR L17 OR L18 OR L19 OR L20 OR L21)
L2	QUE SPE=ON ABB=ON PLU=ON ABNORMAL BEHAVIOUR OR ABORTION OR ACCEPTABLE DIETARY INTAKE OR ACCEPTABLE OPERATOR EXPOSURE LEVEL OR ACUTE DERMAL APPLICATION OR ACUTE DERMAL TOXICITY OR ACUTE EFFECT OR ACUTE EXPOSURE OR ACUTE ORAL TOXICITY OR ACUTE REFERENCE DOSE
L3	QUE SPE=ON ABB=ON PLU=ON ACUTE TOXICITY OR ADDITIVE TOXICITY OR ADULT MORTALITY OR ADVERSE EFFECT OR ADVERSE EVENT OR AERIAL EXPOSURE OR AIR BLAST OR AIRBLAST OR ANORMAL BEHAVIOUR OR ASSESSMENT(1W)RISK OR AVERSIVE RESPONSE OR BBA MODEL OR BEHAVIOUR
L4	QUE SPE=ON ABB=ON PLU=ON BEHAVIOURAL ANOMALIES OR BIO MONITORING OR BIOMONITORING OR BIRTH RATE OR BODY ORGANS OR BODY WEIGHT OR BREEDING LOSS OR BYSTANDER OR CARCINOGEN OR CARCINOGENIC OR CARCINOGENICITY OR CHANGE (1W) BODY WEIGHT OR CHEMOSIS OR CHRONIC CONCERN
L5	QUE SPE=ON ABB=ON PLU=ON CHRONIC EFFECT OR CHRONIC STUDY OR CHRONIC TEST OR CHRONIC TOX OR CHRONIC TOXICITY OR CHRONIC TOXICOLOGICAL STUDY OR CLASTOGENICITY OR CLINICAL SIGN OR CLINICAL SYMPTOM OR CONJUNCTIVAE OR CONJUNCTIVAL CHEMOSIS OR CONJUNCTIVAL SAC
L6	QUE SPE=ON ABB=ON PLU=ON CONSTIPATIO OR CONSUMER OR CONTACT TOXICITY OR CORNEA OR CORNEAL OPACITY OR CREATININE OR CROP INSPECTION OR CYTOPLASMIC CHANGES(1W)HEPATOCYTES OR DAMAGE TO EYES OR DEAD EMBRYO OR DEAD FETUS OR DEAD PUP OR DEATH OR DECREASE(1W)BODY LENGTH
L7	QUE SPE=ON ABB=ON PLU=ON DERMAL OR DEVELOPMENTAL TOXICITY OR DIARRHEA OR DIE OR DIED OR DIETARY EXPOSURE OR DIETARY INTAKE OR DIETARY TOXICITY OR DIPPING OR DISLODGEABLE FOLIAR RESIDUE OR DISORIENTING OR DISTURBANCE(1W)VIABILITY OR DOG OR DUST DRIFT
L8	QUE SPE=ON ABB=ON PLU=ON EFFECT(1W)(BODY WEIGHT OR FOOD CONSUMPTION OR BODY ORGAN) OR EMBRYO OR EMBRYOPATHY OR EMBRYOTOX OR ENDOCRINE(W)DISRUPT? OR ENDOCRINE MODULATION OR ENGINEERING CONTROL OR EPIDEMIOLOGICAL OR EPIDEMIOLOGY OR ERYTHEMA
L9	QUE SPE=ON ABB=ON PLU=ON ESCHAR OR EUROPEM OR EXPOSE OR EXPOSURE OR EYE IRRITATION OR FECUNDITY OR FEEDING STUDY OR FERTILITY RATE OR FETOTOX OR FETOTOXICOLOGICAL OR FETOTOXICOLOG Y OR FOETAL CROWN-RUMP LENGTH OR FOETAL DEVELOPMENT OR FOGGING OR FOLIAR DEPOSITION
L10	QUE SPE=ON ABB=ON PLU=ON FOLIAR DISLODGEABLE RESIDUE OR GAIN(1W)BODY WEIGHT OR GASTROINTESTINAL OR GENOTOX OR GENOTOXIC OR GENOTOXICITY OR GENOTOXICOLOGICAL OR GESTATION OR GROUND BOOM OR GROUNDBOOM OR GUINEA PIG OR HAIR LOSS OR HAND TO MOUTH OR HANDHELD OR HAND-HELD
L11	QUE SPE=ON ABB=ON PLU=ON HAZARD OR HEALTH RISK OR HEPATOTOXIN OR HERSHBERGER ASSAY OR HUMAN EXPOSURE OR HUMAN HEALTH OR HUMAN MONITORING OR IMMUNOTOXICITY OR IMPLANTATION LOSS OR INCREASE (1W) LIVER WEIGHT OR INDURATION (2W) SKIN OR INFERTILITY
L12	QUE SPE=ON ABB=ON PLU=ON INHALATION OR INHALATORY ABSORPTION OR INHALATORY EXPOSURE OR INHALATORY RISK OR INTOXICATION OR INTRAPERITONEAL OR INTRAVENOUS OR INTRAVENOUSLY OR IRRITANT OR IRRITATING (1W)SKIN OR IRRITATION OR IRRITATION (2W)(IRIS OR SKIN)
L13	QUE SPE=ON ABB=ON PLU=ON KNAPSACK OR LABORED BREATHING OR LACERATION (2W) SKIN OR LACTATION OR LC50 OR LD50 OR LIGHT-COLO

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Search Strategy	
L14	RED FECES OR LITTER SIZE OR LITTER WEIGHT OR LIVER OR LIVING PUPS OR LOCAL LYMPH NODE OR LONG-TERM EXPOSURE OR LONGTERM STUDY OR LONG-TERM STUDY QUE SPE=ON ABB=ON PLU=ON LONGTERM TOXICOLOGICAL OR LONG-TERM TOXICOLOGICAL OR LOSS (1W)(BODY WEIGHT OR HAIR) OR MALFORMATION OR MAMMAL OR MAMMALIAN OR MARGIN (1W) SAFETY OR MATERNAL TOXICITY OR MATING BEHAVIOUR OR MEDICAL DATA OR METABOLIC PATH OR METABOLIC PATHWAY
L15	QUE SPE=ON ABB=ON PLU=ON MONKEY OR MORTALITY OR MOUSE OR MRL EXCEEDANCE OR MRL VIOLATION OR MULTIGENERATION OR MUTAGEN OR MUTAGENIC OR MUTAGENICITY OR NECROPSY OR NEUROTOXIC OR NEUROTOXICITY OR NO OBSERVED ADVERSE EFFECT LEVEL OR NO OBSERVED EFFECT LEVEL
L16	QUE SPE=ON ABB=ON PLU=ON NOAEL SUBCHRONIC DOG OR NON DIETARY EXPOSURE OR NON-DIETARY EXPOSURE OR NO-OBSERVED ADVERSE EFFECT LEVEL OR NURSING OR OBJECT TO MOUTH OR OCCUPATIONAL EXPOSURE OR OEDEMA OR OFFSPRING OR OPACITY OR OPERATOR OR ORAL ABSORPTION OR ORAL TOXICITY
L17	QUE SPE=ON ABB=ON PLU=ON ORALLY OR OVULATION OR PARENTERAL OR PARTURITION OR PASSIVE DOSIMETRY OR PATHOLOGICAL OR PATHOLOGY OR PATIENT OR PEELING (1W) SKIN OR PENETRATION FACTOR OR PERCUTANEOUS OR PERSONAL PROTECTIVE EQUIPMENT OR PHOTOTOXICITY OR PILOERECTION
L18	QUE SPE=ON ABB=ON PLU=ON PLACENTAL WEIGHT OR POISON OR POISONING OR POST-MORTEM EXAMINATIONS OR POSTNATAL OR POST-NATAL OR PREGNANCY OR PREGNANT OR PREMATURE BIRTH OR PRENATAL TOX OR PRENATAL TOXICOLOGY OR PRIMATE OR PROTECTIVE CLOTHING OR PROTECTIVE GARMENT
L19	QUE SPE=ON ABB=ON PLU=ON PROTECTIVE GLOVE OR PUBLIC HEALTH OR RABBIT OR RAT OR RE ENTRY OR REDDENING (1W) TREATMENT AREA OR REDNESS OR REDUCED BODY WEIGHT OR REDUCED BODY WEIGHT GAIN OR REENTRY OR RE-ENTRY OR REFERENCE DOSE OR RELEVANT (2W) REPRODUCTIVE SUCCESS
L20	QUE SPE=ON ABB=ON PLU=ON REPRODUCTION OR REPRODUCTIVE OR REPROTOX OR RESIDENT OR RESIDENTIAL EXPOSURE OR RESIDUE IN OR RESPIRATORY EXPOSURE OR RESPIRATORY PROTECTIVE EQUIPMENT OR RISK ASSESSMENT OR RISK (2W) (CONSUMER OR OPERATOR) OR SEXUAL
L21	QUE SPE=ON ABB=ON PLU=ON RISK (1W) SERIOUS DAMAGE (1W) EYES OR SAFE OR SAFETY OR SAFETY ASSESSMENT OR SAFETY PRECAUTION OR SECONDARY EFFECT OR SECONDARY POISONING OR SEEDTROPX OR SENSITISATION BY SKIN CONTACT OR SENSITISER OR SENSITISING TESTS OR SENSITIZER
L22	QUE SPE=ON ABB=ON PLU=ON SHORT LONG TERM EXPOSURE OR SHORT-TERM EXPOSURE OR SHORT-TERM TOXICITY OR SHORT-TERM TOXICOLOGICAL OR SIDE EFFECT OR SIGNS (1W)(AGGRESSION OR TOXICITY) OR SKIN IRRITANT OR SKIN IRRITATION OR SKIN SENSITISATION OR SKIN SENSITISING
L23	QUE SPE=ON ABB=ON PLU=ON SKIN SENSITIZATION OR SKIN SENSITIZING OR SLIGHTLY HARMFUL OR SPASTIC GAIT OR SPERMATOGENESIS OR SPLEEN OR SPRAY DRIFT OR STOMACH LESIONS OR STUNTED FETUS OR SUBACUTE OR SUB-ACUTE OR SUBCHRONIC OR SUB-CHRONIC OR SUBLETHAL OR SUB-LETHAL
L24	QUE SPE=ON ABB=ON PLU=ON SUBSTANCE-RELATED EFFECT OR SURVIVAL OR SYMPTOMS (1W) TOXICITY OR SYSTEMIC EXPOSURE OR SYSTEMIC INTOLERANCE REACTIONS OR TERATOGEN OR TERATOGENIC OR TERATOGENICITY OR TERATOLOGY OR TESTICULAR DEVELOPMENT
L25	QUE SPE=ON ABB=ON PLU=ON ACTIVE INGREDIENTS (1W) SAFE OR (COMPOUND OR COMPOSITION OR FUNGICIDE OR INSECTICIDE OR PESTICIDE) (1W)SAFE OR THEORETICAL TOXICITY OR TOPICAL OR TOTAL DIET STUDY OR TOX OR TOXIC OR TOXICITY OR TOXICOGENOMIC OR TOXICOKINETICS OR TOXICOL
L26	QUE SPE=ON ABB=ON PLU=ON TOXICOLOGICAL OR TOXICOLOGY OR

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Search Strategy	
L27	TRACTOR MOUNTED OR TRANSDERMAL OR TRANSFER COEFFICIENT OR TRANSFERABLE RESIDUES OR TREATMENT RELATED EFFECTS OR TUMORIGEN OR TUNNEL TEST OR TWO-GENERATION OR UNACCEPTABLE EFFECTS OR UTEROTROPHIC ASSAY QUE SPE=ON ABB=ON PLU=ON VERTEBRATE OR VIABILITY (1W) EMBRYO OR WEANING OR WEIGHT ALTERATION OR WEIGHTS OR WHOLE BODY DOSIMETER OR WHOLE BODY DOSIMETRY OR WORKER

**Table 2.2.2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.	
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)	
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.	
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.	

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

Provider	Database	Justification	Limits applied
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.	
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.	
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily	
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.	
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)	
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.	

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

Provider	Database	Justification	Limits applied
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAlplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly	
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.	
	PASCAL	The database provides access to the world’s scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (Searches 1-5 only).	
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.	
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.	

\* Total number of summary records retrieved after removing duplicates

**Table 2.2.3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

**Table 2.2.4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.2.5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

## Appendix 2.3 Metabolism and Residues

**Table 2.3.1: Detailed Search Parameters for Metabolism and Residues data – Search Terms**

Search Strategy		
Chemical Names:		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-		
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)		
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)		
1,2,4-Triazol-1-ylacetic acid		
1,2,4-Triazole-1-acetic acid		
1H-1,2,4-Triazol-1-ylacetic acid		
2-(1,2,4-Triazol-1-yl) acetic acid		
2-(1H-1,2,4-Triazol-1-yl) acetic acid		
1H-1,2,4-Triazole (CA Index Name)		
s-Triazole (8CI)		
3,4-Diazapyrrole		
4H-1,2,4-Triazole		
PLUS		
L1	QUE	(METABOL? OR RESIDUE# OR TRANSFORM? OR BIOTRANSFORM?)
L2	QUE	(DEGRAD? OR BIODEGRAD? OR FATE# OR MRL OR MRLS)
L3	QUE	(CONJUGAT? OR EXCRET? OR ELIMINAT?)
L4	QUE	(FOOD# OR FEED# OR DIET# OR DIETARY OR CONSUMER? OR HUMAN#)
L5	QUE	(CONTAMINAT? OR SAFE? OR EXPOS? OR ANALY? OR ASSES?)
L6	QUE	(INTAKE? OR (IN(W)TAKE?) OR SURVEY? OR RISK?)
L7	QUE	(TOXIC? OR STUDY? OR STUDIES?)
L8	QUE	(L4 (10A) (L5 OR L6 OR L7))
L9	QUE	(LIVESTOCK# OR COW# OR GOAT# OR CATTLE# OR BULLOCK#)
L10	QUE	(BOVINE? OR BOVIDAE? OR BOS OR BULL# OR HEIFER? OR CAPRA#)
L11	QUE	(SHEEP# OR EWE OR EWES OR RAM# OR SWINE# OR PIGLET#)
L12	QUE	(PIG# OR SUIDAE? OR SUS OR OVIS OR OX OR OXEN)
L13	QUE	(RUMINANT? OR HEN# OR CHICKEN# OR FOWL# OR TURKEY?)
L14	QUE	(DUCK# OR GOOSE OR GEESE OR CAPON# OR POULTRY?)
L15	QUE	(MEAT OR MILK OR EGG# OR TISSUE#)
L16	QUE	(( (BROKEN? OR BREAK?) (W) (DOWN OR UP)) OR BREAKDOWN?)
L17	QUE	(BREAKSDOWN? OR UPTAKE? OR PROCESSING? OR BOUND?)
L18	QUE	(( (NON(W)EXTRACTAB?) OR (ROTATIONAL(3A)CROP#))
L19	QUE	(( (L1 OR L2 OR L3) OR L8 OR (L9 OR L10 OR L11 OR L12 OR L13 OR L14) OR (L15 OR L16 OR L17 OR L18))

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**Table 2.3-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied	Number *
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	10 years	856 (600, 172, 84)
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.		
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

Provider	Database	Justification	Limits applied	Number *
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAPlus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly		
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly. (Searches 1-5 only)		
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		

\* Total number of summary records retrieved after removing duplicates – numbers in parentheses are the summary records retrieved in the initial search and then the 1<sup>st</sup> and 2<sup>nd</sup> top-up respectively)

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**Table 2.3-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.3-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.3-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.4 Ecotoxicology

**Table 2.4.1: Detailed Search Parameters for Ecotoxicological studies (CA 8.1 to 8.9)**

Search Strategy	
L1	QUE (288-88-0 OR 1450828-63-3 OR 28711-29-7 OR 333354-47-5)
L2	QUE (86362-20-1 OR 114419-45-3 OR 4819-36-7)
L3	QUE (1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YLACETIC (W) ACID)
L4	QUE (1 (W) 2 (W) 4 (W) TRIAZOLE (W) 1 (W) ACETIC (W) ACID)
L5	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YLACETIC (W) ACID)
L6	QUE (2 (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YL (W) ACETIC (W) ACID)
L7	QUE (2 (2W) 1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YL (W) ACETIC (W) ACID)
L8	QUE ((1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOLE) OR (S (W) TRIAZOLE))
L9	QUE ((3 (W) 4 (W) DIAZAPYRROLE) OR (4H (2W) 1 (W) 2 (W) 4 (W) TRIAZOLE))
L10	QUE (25167-73-1 OR 27236-77-7 OR 116421-29-5 OR 1001118-18-8)
L11	QUE (3 (2W) 1H (W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) YL (W) ALANINE)
L12	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) PROPANOIC (W) ACID)
L13	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) PROPIONIC (W) ACID)
L14	QUE ((2 (W) HYDROXY (W) 3) (2W) (L12 OR L13))
L15	QUE ((ALPHA (W) (HYDROXY OR AMINO)) (3A) (L12 OR L13))
L16	QUE (L1-11 OR L14-15)
<b>PLUS</b>	
L1	QUE (RIPARIAN? OR REPTILE? OR SNAKE? OR LIZARD?)
L2	QUE (TORTOISE? OR TURTLE? OR TERRAPIN? OR CROCODIL?)
L3	QUE (ALLIGATOR? OR CAIMAN? OR GHARIAL? OR HOVERFLIES)
L4	QUE ((MEADOW# (W) VOLE#) OR PSEUDOKIRSCHNERIELLA)
L5	QUE (RHAPHIDOCELIS OR NITZSCHIA OR CYCLOTELLA OR MICROCYSTIS)

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<b>Search Strategy</b>		
L6	QUE	(OSCILLATORIA OR APHANIZOMENON OR ANKISTRODESMUS)
L7	QUE	(TEILINGRIA OR MONORAPHIDIUM OR RADIOCOCCACAE OR TETRASPORALES)
L8	QUE	(TETRAEDRON OR TREUBARIA OR WILLEA OR COSMOCLADIUM)
L9	QUE	(HYPOASPIS OR (SOIL(3A)MICROORGAN?) OR ECHINOCHLOA OR SPARTINA)
L10	QUE	(SALVINIA OR NAJAS OR CALLITRICHE OR MYOSOTIS OR STRATIOTES)
L11	QUE	(HIPPURUS OR PERSICARIA OR CLOEON? OR CORBICULA?)
L12	QUE	(NEOCARIDINIA? OR NEOCARIDINA? OR MYSID? OR CICHLIDAE)
L13	QUE	(CICHLID# OR LEPOMIS? OR SERRANIDAE OR PERCIFORMES)
L14	QUE	(ICTALURUS? OR POECILIA? OR ORYZIAS? OR GASTEROSTEUS?)
L15	QUE	(GASTEROSTEIDAE OR SALVELINUS OR BRACHYDANIO? OR CARASSIUS?)
L16	QUE	(MISGUMUS? OR CYPRINODON? OR FUNDULUS? OR MISGURNUS?)
L17	QUE	(BREAM OR ROTIFER# OR GAMMARUS OR GAMMARID? OR MAYFLY?)
L18	QUE	(BIVALVE# OR MUSSEL# OR MOLLUSK# OR MOLLUSC# OR BUFO)
L19	QUE	(NEWT# OR SCALLOP# OR CLAM# OR GAMBUSIA OR OREOCHROMIS)
L20	QUE	(OSTRAC? OR TUBIFEX? OR TURBELLARIA OR COPEPODA)
L21	QUE	(PREDACE? OR PREDACI? OR PARASITOID? OR APIS OR APIDAE)
L22	QUE	(BOMBUS OR BOMBINAE OR WORM# OR LUMBRICIDAE OR LUMBRICUS)
L23	QUE	(ALLOBOPHORA? OR DENDROBAENA? OR APORRECTODEA? OR DENDRODRILUS?)
L24	QUE	(EISENIA? OR OCTOLASION? OR (LACE(W)WING#) OR NEUROPTER?)
L25	QUE	(CARABID? OR CARBUS OR STAPHYLINID? OR COCCINEL? OR ADALIA?)
L26	QUE	(STETHORUS? OR SCYMNUS? OR WASP# OR VESPIDAE OR SPHECOIDEA)
L27	QUE	(SPHECIDAE OR STIZIDAE OR OPIUS OR (ICHNEUMON(W)FL?))
L28	QUE	(ICHNEUMONID? OR BRACONID? OR CHALCID? OR CYNIP? OR APHIDI?)
L29	QUE	(EUCOILID? OR IBALIID? OR FIGITID? OR EURYTOM? OR TORYM?)
L30	QUE	(ORYM? OR EUCHARIT? OR PERILAMP? OR PTEROMAL? OR CHRYSOLAMP?)
L31	QUE	(EUPELM? OR ENCYRT? OR SIGNIPHOR? OR APHELIN? OR ELASMID?)
L32	QUE	(ELASMUS OR TETRACAMP? OR MYMAR? OR HELOR? OR PROCTOTRUP?)
L33	QUE	(DIAPRI? OR SCELION? OR PLATYGASTR? OR PLATYGASTER?)
L34	QUE	(CERAPHRON? OR MEGASPIL? OR ARANE? OR OPILION? OR PHALANG?)
L35	QUE	(ARACHNID? OR HARVESTM? OR DADDYLONGLEG? OR (DADDY(W)LONG(W)LEG?))
L36	QUE	((DADDY(W)LONGLEG?) OR COLLEMB? OR (SPRING(W)TAIL?) OR CYDNODROMUS?)
L37	QUE	(PARDOSA? OR ORIUS? OR TYPHLODROM? OR PHYTOSEIULUS? OR SYRPHID?)
L38	QUE	(METASYRPHUS? OR SYRPHUS? OR EUPEODES? OR EPISYRPHUS? OR SYRPHIAN?)
L39	QUE	(EPISTROPHE? OR AMBLYSEIUS? OR POECILUS? OR TRECHUS? OR BEMBIDION?)
L40	QUE	(NEBRIA? OR PTEROSTICHUS? OR CALOSOMA? OR TACHYPORUS? OR NABIDAE?)
L41	QUE	(GEOCORIS? OR HYMENOPT? OR HAEMATOLOECHA? OR CHRYSOPID?)

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<b>Search Strategy</b>	
OR	
L42	QUE (SYMPHYTA?) (OULEMA? OR APHYTIS? OR BATHYPLECTES? OR LINPHIIDAE? OR LYNPHIIDAE?)
L43	QUE (LINYPHIIDAE? OR ERIGONE? OR BATHYPHANTES? OR MEIONETA?
OR	
L44	QUE (OEDOTHORAX?) (LEPTYHPHANTES? OR LYCOSID? OR LYCOSA? OR CHRYSOPA? OR DACNUSA?)
L45	QUE (CYRTORHINUS? OR CRYPTOLAEMUS? OR ZETZELLIA? OR LEPTOMASTIX?)
L46	QUE (TRICHOGRAMMA? OR ENCARSIA? OR MACROLOPHUS? OR CHRYSOPERLA?)
L47	QUE (ALEOCHARA? OR CHRYSOPID# OR CHRYSOPIDAE OR DIABROTICA)
L48	QUE (PALEXORISTA? OR MAMMAL## OR ANIMAL? OR RABBIT? OR RODENT#)
<b><u>BIRD PROFILE [L94]</u></b>	
L49	QUE (BLACKBIRD# OR (BLACK(W)BIRD#) OR ((TURDUS OR T) (W)MERULA))
L50	QUE (CHAFFINCH? OR ((FRINGILLA OR F) (W)COELEBS) OR GREENFINCH?)
L51	QUE (((CARDUELIS OR C) (W)CHLORIS) OR SONGTHRUSH?)
L52	QUE (((SONG(W)THRUSH?) OR ((TURDUS OR T) (W)PHILOMELOS) OR WREN#)
L53	QUE (((TROGLODYTES OR T) (W)TROGLODYTES) OR (WILLOW(W)WARBLER#))
L54	QUE (((PHYLLOSCOPUS OR P) (W)TROCHILUS) OR (GREAT(W)TIT#))
L55	QUE (((PARUS OR P) (W)MAJOR) OR ROBIN# OR GOLDFINCH?)
L56	QUE (((ERITHACUS OR E) (W)RUBECULA) OR DUNNOCK#)
L57	QUE (((CARDUELIS OR C) (W)CARDUELIS) OR LINNET#)
L58	QUE (((PRUNELLA OR P) (W)MODULARIS) OR SKYLARK# OR (SKY(W)LARK#))
L59	QUE ((HEDGE(W) (SPARROW# OR ACCENTOR#)))
L60	QUE (((CARDUELIS OR C) (W)CANNABINA) OR ((ALAUDA OR A) (W)ARVENSIS))
L61	QUE ((RED(W)LEGGED(W)PARTRIDGE#) OR ((ALECTORIS OR A) (W)RUFA))
L62	QUE ((MEADOW(W)PIPIT#) OR MEADOWPIPIT# OR ((ANTHUS OR A) (W)PRATENSIS))
L63	QUE (LAPWING# OR ((VANELLUS OR V) (W)VANELLUS) OR PEEWIT#)
L64	QUE (STARLING# OR ((STURNUS OR S) (W)VULGARIS))
L65	QUE ((TURTLE(W)DOVE#) OR ((STREPTOPELIA OR S) (W)TURTUR))
L66	QUE (YELLOWHAMMER# OR (YELLOW(W)HAMMER#) OR (YELLOW(W)WAGTAIL#))
L67	QUE (((EMBERIZA OR E) (W)CITRINELLA) OR (YELLOW(W)WAG(W)TAIL#))
L68	QUE (((MOTACILLA OR M) (W)FLAVA) OR (FAN(W)TAILED(W)WARBLER#))
L69	QUE ((GREY(W)LAG(W)G!!SE) OR ((ANSER OR A) (W)ANSER))
L70	QUE (REEDBUNTING# OR (REED(W)BUNTING#) OR ((EMBERIZA OR E) (W)SCHOENICLUS))
L71	QUE (CHAFFINCH? OR BLUETIT? OR (BLUE(W)TIT?))
L72	QUE (((PARUS OR P) (W)CAERULEUS) OR (SYLVIA(W)COMMUNIS))
L73	QUE (((GALERIDA OR G) (W)CRISTATA) OR (TREE(W)SPARROW#))
L74	QUE (((COTURNIX OR C) (W)COTURNIX) OR (GREY(W)PARTRIDGE#))

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<b>Search Strategy</b>		
L75	QUE	(( (PERDIX OR P) (W) PERDIX) OR ((PHASIANUS OR P) (W) COLCHICUS))
L76	QUE	(( (MILIARIA OR M) (W) CALANDRA?) OR GREYLAGG!!SE)
L77	QUE	((GREYLAG (W)G!!SE) OR ((COLUMBA OR C) (W) PALUMBUS?))
L78	QUE	(( (STREPTOPELIA OR S) (W) (ORIENTALIS? OR RISORIA?))
L79	QUE	(( (MOTACILLA OR M) (W) ALBA?) OR (CRESTED (W) LARK#))
L80	QUE	((WHITE (W) WAGTAIL#) OR (WOOD (W) PIGEON#) OR (BIRD (W) LIFE))
L81	QUE	((SONG (W) BIRD#) OR VANELLUS? OR (PEE (W) WIT#))
L82	QUE	(AVIFAUNA? OR (AVI (W) FAUNA?) OR SONGBIRD?)
L83	QUE	(ORNITHOLOG? OR PASSERINE? OR WOODPIGEON#)
L84	QUE	(( (PASSER OR P) (W) MONTANUS) OR QUAIL# OR (CALANDRA (W) LARK#))
L85	QUE	(CISTICOLA? OR (Z (W) CISTICOLA?) OR BIRDLIFE)
L86	QUE	(GEESE OR GOOSE OR SPARROWS OR PIGEONS OR LARK#)
L87	QUE	(WARBLER# OR PARTRIDGE# OR BUNTING# OR WAGTAIL#)
L88	QUE	(WHITETHROAT# OR PIED# OR (WHITE (W) THROAT#))
L89	QUE	((FORAGING OR FARMLAND OR GRASSLAND) (3A) BIRD#)
L90	QUE	(BLUEBIRD# OR (ROCK (W) PTARMIGAN#) OR (BLACK (W) REDSTART#))
L91	QUE	((PREDATOR? OR NONTARGET? OR (NON (W) TARGET)) (3A) BIRD#)
L92	QUE	((CORN (W) BUNTING#) OR SERINS OR SERINUS)
L93	QUE	(L49-L92)
L94	QUE	L93 NOT (JAPANESE? OR JAPONICA?)
<b><u>MAMMALS PROFILE [L105]</u></b>		
L95	QUE	(( (SMALL OR WILD) (3A) MAMMAL#) OR (WILD (3A) ANIMAL?))
L96	QUE	(VOLE# OR GLIS OR DORMOUSE OR DORMICE OR ELIOMY#)
L97	QUE	(LEROT# OR LAGOMORPH# OR LEPORID? OR LEPUS OR ORYCTOLAGUS?)
L98	QUE	(HARE# OR SORICIDAE? OR SOREX? OR NEOMY# OR CROCIDURA?)
L99	QUE	(SHREW# OR WOODMOUSE OR WOODMICE OR APODEMUS? OR MICROTUS?)
L100	QUE	(CLETHRIONOMYS? OR CRICETIDAE? OR MICROTIN?)
L101	QUE	(RAPTOR# OR MARMOSET# OR GOPHER# OR GRASSCUTTER#)
L102	QUE	((PREDATOR? OR NONTARGET? OR (NON (W) TARGET?)) (3A) MAMMAL#)
L103	QUE	((WOOD (W) (MOUSE OR MICE)) OR ARVICOLA?)
L104	QUE	(MEADOW# (W) VOLE#)
L105	QUE	(L95-L104)
<b><u>EXISTING ECOTOX PROFILE [L171]</u></b>		
L106	QUE	(ECOTOX? OR LC50 OR ((LC OR EC OR LR) (W) 50) OR EC50 OR LR50)
L107	QUE	(ECO OR ECOL OR ECOLOG? OR ENV OR ENVIRONM? OR AQUATIC?)
L108	QUE	(L107 (5A) (TOX? OR RISK? OR IMPACT? OR EFFECT?))
L109	QUE	(AQUATIC? OR FRESHWATER? OR (FRESH (W) WATER?))
L110	QUE	(FLORA OR FAUNA OR BIOTA OR ORGANISM? OR INSECT?)
L111	QUE	(ENVIRONM? OR LIFE OR INVERTEB? OR CRUSTACE? OR SPECIES)
L112	QUE	(ENTOMOFAUNA OR (ENTOMO (W) FAUNA))
L113	QUE	(L109 (5A) (L110 OR L111 OR L112))
L114	QUE	(MAGNA? OR (D (W) MAGNA?) OR CHIRONOM? OR BRACHIONUS?)
L115	QUE	(LIMNEA? OR CRASSOSTREA? OR ALGA# OR FISH OR FISHES)
L116	QUE	(ONCORHYNCHUS? OR SALMONIDAE? OR CYPRINUS? OR CYPRINID?)
L117	QUE	(PIMEPHALES? OR PISCES OR TROUT OR SUNFISH? OR CARP)

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Search Strategy		
L118	QUE	(MINNOW? OR (F(W)MINNOW?) OR CATFISH? OR ZEBRAFISH?)
L119	QUE	(GOLDFISH? OR (ZEBRA(W)DANIO#) OR GUPPY OR GUPPIES)
L120	QUE	(KILLFISH? OR FATHEAD? OR BLUEGILL? OR SALMON#)
L121	QUE	(THUNDERFISH? OR (WATER(W) (FLY OR FLEA?)) OR WATERFLEA?)
L122	QUE	(FROG# OR AMPHIBIA? OR SHRIMP# OR PRAWN# OR CRAB# OR TOAD#)
L123	QUE	(TADPOLE# OR CRAYFISH? OR SHELLFISH? OR LOBSTER#)
L124	QUE	(OYSTER# OR SNAIL# OR RANA OR RANIDAE? OR PLANKTON?)
L125	QUE	L106 OR L108
L126	QUE	((NONTARGET? OR (NON(W)TARGET?)) (5A) (PLANT? OR FLORA?))
L127	QUE	((AQUATIC(3A) (PLANT? OR (PHYTO(W)TOX?) OR PHYTOTOX?))
L128	QUE	(SEDIMENT? OR HYDROSOIL? OR DUCKWEED? OR PONDWEED?)
L129	QUE	(( (DUCK OR POND) (W)WEED#) OR MACROPHYT? OR PERIPHYTON?)
L130	QUE	(POTAMOGETON? OR CHAROPHYTA? OR ELODEA? OR HYDROCHARITA?)
L131	QUE	(CERATOPHYL? OR CHLAMYDOMON? OR SELENASTRUM? OR CHLORELLA?)
L132	QUE	(SCENEDESMUS? OR SKELETONEMA? OR NAVICULA? OR ANABAENA?)
L133	QUE	(MYRIOPHYLLUM? OR GLYCERIA?)
L134	QUE	(NONTARGET? OR (NON(W)TARGET?) OR BENEFICIAL?)
L135	QUE	(EFFECT? OR INVERTEB? OR ORGANISM? OR ARTHROPOD? OR INSECT?)
L136	QUE	(FAUNA OR SPECIES OR (ENTOMO(W)FAUNA?) OR ENTOMOFAUNA?)
L137	QUE	((L134(5A) (L135 OR L136))
L138	QUE	(PREDAT? OR (NATURAL(W)ENEM?) OR BEE OR BEES OR HONEYBEE#)
L139	QUE	(BUMBLEBEE# OR ((HONEY OR BUMBLE) (W)BEE#) OR EARTHWORM?)
L140	QUE	((EARTH(W)WORM?) OR LADYBUG# OR LADYBEETLE# OR LADYBIRD#)
L141	QUE	((LADY(W) (BUG# OR BEETLE# OR BIRD#)) OR HOVERFLY)
L142	QUE	(HOOVERFLIES OR SAWFLY OR SAWFLIES OR DRONEFLY)
L143	QUE	(DRONEFLIES OR FLOWERFLY OR FLOWERFLIES OR LACEWING?)
L144	QUE	(( (HOVER OR DRONE OR FLOWER OR SAW) (W) (FLY OR FLIES))
L145	QUE	(SPIDER# OR SPRINGTAIL? OR (ROOT(W)WORM#) OR ROOTWORM#)
L146	QUE	(L137-L145)
L147	QUE	(BIRD? OR AVES OR AVIAN? OR (AVI(W)FAUNA?) OR AVIFAUNA?)
L148	QUE	(SONGBIRD? OR (SONG(W)BIRD?) OR ORNITHOLOG?)
L149	QUE	(L147 OR L148)
L150	QUE	((WILD(3A) (LIFE OR ANIMAL#)) OR WILDLIFE OR SQUIRREL?)
L151	QUE	(VOLE# OR SCIURUS OR GLIRID? OR GLIS OR DORMOUSE)
L152	QUE	(DORMICE OR ELIOMYS OR LEROT# OR MUSTELID? OR MINK#)
L153	QUE	(MUSTELINE# OR WEASEL? OR STOAT? OR MUSTEL? OR BADGER?)
L154	QUE	(MELES OR MELINAE OR OTTER# OR LUTRA OR LUTRINAE)
L155	QUE	(LAGOMORPH# OR LEPORID? OR LEPUS OR ORYCTOLAGUS OR HARE#)
L156	QUE	(TALPA OR MOLE OR MOLES OR HEDGEHOG? OR (HEDGE(W)HOG?))
L157	QUE	(CROCIDURA? OR SHREW# OR WOODMOUSE OR WOODMICE OR APODEMUS)
L158	QUE	(MICROTUS OR ARVICOLA OR CLETHRIONOMYS? OR CRICETIDAE?)
L159	QUE	(ERINACEUS OR ERINACEIDAE? OR SORICIDAE? OR SOREX)
L160	QUE	(ENDOCRIN? OR HORMON?)
L161	QUE	(DISRUPT? OR MIMIC? OR MODULAT? OR DISORDER? OR DISEASE?)
L162	QUE	(L160(5A) L161)
L163	QUE	(DAPHNI? OR CERIODAPHNI? OR HYALELLA? OR ASSELLUS)
L164	QUE	(L113-L124) OR L163
L165	QUE	(PHYTOPLANKTON? OR AUFWUCH# OR LEMNA? OR ARALES OR

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Search Strategy	
CHARA)	
L166	QUE (L126-L129) OR (L130-L133) OR L165
L167	QUE (NEOMYS OR MICROTINAE?)
L168	QUE (L150-L159) OR L167
L169	QUE (LOACH? OR STICKLEBACK? OR MUMMICHOG# OR TILAPIA? OR ASELLUS)
L170	QUE L164 OR L169
L171	QUE L125 OR L170 OR L166 OR L146 OR L149 OR L168 OR L162
<b>L172</b>	<b>QUE (L1-L48)</b>
<b>L173</b>	<b>QUE (L171 OR L172 OR L94 OR L105) TOTAL PROFILE</b>

**Table 2.4-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied	Number*
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None	138
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		82 (1)
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		0
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		2
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		2

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Provider	Database	Justification	Limits applied	Number*
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.		45 (2)
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		15
	HCAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		148 (1)
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		0
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		0
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		0
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly		3 (2)

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Provider	Database	Justification	Limits applied	Number*
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		1
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (searches 1-5 only).		1
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		6
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		0

\* Total number of summary records retrieved after removing duplicates, number in parenthesis is number in Search 4

**Table 2.4-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.4-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.5-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

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\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.5 Environmental Fate

**Table 2.5-1: Detailed Search Parameters for Fate and behaviour in the environment (CA 7.1.1 to 7.5)**

<b>Search Strategy</b>	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE (FATE# OR DEGRAD? OR PERSIST? OR DECOMP? OR DECAY?)
L2	QUE (TRANSFORM? OR DETERIORAT? OR METAB? OR DEGENERAT?)
L3	QUE (BIODEGRAD? OR BIOTRANSFORM? OR BIODETERIORAT?)
L4	QUE (BIODEGENERAT? OR BREAKDOWN? OR BREAKSDOWN?)
L5	QUE (((BROKEN? OR BREAK?)(W)(UP OR DOWN)) OR HALFLIFE#)
L6	QUE (HALFLIVES OR HALF(W)(LIFE OR LIVES) OR DEGRDN# OR DECOMP#)
L7	QUE (BIODEGRDN# OR DEGN# OR BIODEGN# OR DISSIP? OR RESIDUE?)
L8	QUE (LEACH? OR TRANSPORT? OR MOBIL? OR MOVEMENT? OR HYDROLY?)
L9	QUE (ADSORP? OR ADSORB? OR SORP? OR SORB? OR DESORP?)
L10	QUE (DESORB? OR RUNOFF OR (RUN#(W)OFF) OR DRAIN? OR PERCOLAT?)
L11	QUE (WASHOFF? OR WASHOUT? OR (WASH?(W)(OUT OR OFF)))
L12	QUE (((OFF(W)TARGET) OR LATERAL OR HORIZONTAL)(3W)MOVE?)
L13	QUE (PHOTOLY? OR PHOTODEGRAD? OR PHOTODECOMP?)
L14	QUE (PHOTOTRANSFORM? OR PHOTOSTAB? OR PHOTODEGRDN# OR PHOTODEGN#)
L15	QUE ((PHOTO(W)DECOMP? OR DEGRAD? OR TRANSFORM? OR STAB? OR CHEM?))
L16	QUE (PHOTOCHEM? OR VOLATIL? OR VAPOUR? OR VAPOR? OR DT50 OR DT90)
L17	QUE ((DT(W)50) OR (DT(W)90) OR KDOC OR (K(W)DOC) OR KD OR KOC)
L18	QUE ((K(W)OC) OR (PARTITION?(3W)COEFF?) OR FREUNDLICH)

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

### Search Strategy

L19 QUE (SEDIMENT? OR SOIL OR SOILS OR PODZOL? OR CLAY? OR SAND?)  
L20 QUE (SILT? OR CHERNOZEM? OR PODSOL? OR LOAM? OR PEAT?)  
L21 QUE ((ORGANIC(2W)MATTER?) OR MONTMORIL? OR LATOSOL? OR HUMIC?)  
L22 QUE (HUMUS? OR SUBSOIL? OR AIR OR WATER? OR ATMOSPHER?)  
L23 QUE (RAIN### OR RAINWATER? OR RAINFALL? OR LEACH?)  
L24 QUE (GROUNDWATER? OR ENVIRONMENT? OR PRECIPITAT? OR POND#)  
L25 QUE (STREAM# OR RIVER# OR DELTA# OR ESTUAR? OR SEDIMENT?)  
L26 QUE (AQUATIC? OR MARINE? OR TIDAL? OR BENTHIC? OR LAKE#)  
L27 QUE (BENTHOS? OR LIMNO? OR FRESHWATER? OR SEAWATER?)  
L28 QUE (SALTWATER? OR ((GROUND? OR FRESH OR SEA OR SALT)(W)WATER?))  
L29 QUE (LACUSTRINE? OR MIRE OR MIRES OR RESERVOIR# OR CANAL#)  
L30 QUE (LOCH# OR SEA OR OCEAN OR OCEANS OR LAGOON? OR SEAS)  
L31 QUE (SEABED OR SEAFLOOR OR INTERTIDAL? OR SHORE? OR COAST?)  
L32 QUE (BRACKISH OR LITTORAL? OR SEASHORE? OR MEIOBENTH?)  
L33 QUE (MICROBENTH? OR MACROBENTH? OR HARBOUR# OR FLUVIAL?)  
L34 QUE (MARSH? OR BOG OR BOGS OR SWAMP? OR FEN OR FENS OR ALLUVI?)  
L35 QUE (MUDFLAT? OR (MUD(W)FLAT?) OR BAY OR BAYS OR CREEK#)  
L36 QUE (HYDROSOIL# OR (HYDRO(W)SOIL#) OR MESOCOSM? OR MICROCOSM?)  
L37 QUE (WETLAND? OR FENLAND? OR ((WET OR FEN)(W)LAND?))  
L38 QUE (WATERWAY? OR WATERSHED? OR (WATER(W)(WAY? OR SHED?)))  
L39 QUE (CATCHMENT? OR DITCH? OR DRAIN# OR DRAINAG?)  
L40 QUE (((FOLIAGE OR FOLIAR OR LEAF OR LEAVES)(5A)EVAPORAT? ) )  
L41 QUE ((SPRAY? OR DUST?)(3A)DRIFT)  
L42 QUE (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR L8 OR L9 OR L10  
OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR L17 OR L18 OR L19  
OR L20 OR L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28  
OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37  
OR L38 OR L39 OR L40 OR L41)

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

**Table 2.5-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied	Number*
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None	186 (1)
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		55 (0)
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		0 (0)
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		0 (0)
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		1 (0)
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.		19 (0)
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		16 (3)

**Triazole Metabolite Derivatives Group (TMDG):**  
**BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG**

Provider	Database	Justification	Limits applied	Number*
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		734 (11)
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		0 (0)
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		0 (0)
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		0 (0)
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAPLUS, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web preprints. Covers the period 1907 – present and is updated weekly		0 (1)
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		2 (2)

## Triazole Metabolite Derivatives Group (TMDG):

BASF SE, Bayer AG, Dow AgroScience LLC, Isagro S.p.A, Syngenta Crop Protection AG

Provider	Database	Justification	Limits applied	Number*
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (searches 1-5 only).		9 (0)
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		63 (3)
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		2 (1)

\* Total number of summary records retrieved after removing duplicates in Search 1, number in parenthesis is number in Search 4

**Table 2.5-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.5-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.5-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

Document Title

**Literature Search  
Triazole Derivative Metabolites,  
Being Common Metabolites of Triazole-Fungicides**

Data requirement

**EU Regulation 1107/2009 & EU Regulation 283/2013  
Document MCA  
Section 9: Literature data**

According to the Guidance Document SANCO/10181/2013, for  
preparing dossiers for the approval of a chemical active substance

**Version 7**

Date

**3<sup>rd</sup> July 2020**

Owner

**Triazole Metabolite Derivatives Group (TMDG)**

**BASF SE, Bayer AG, Dow AgroScience LLC,  
Isagro S.p.A, Syngenta Crop Protection AG**

Author

**Helen M Thornton**

## **OWNERSHIP STATEMENT**

**This document, the data contained in it and copyright therein are owned by the Triazole Derivative Metabolite Group (TDMG). No part of the document or any information contained therein may be disclosed to any third party without the prior written authorisation of the TDMG.**

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## Version history<sup>1</sup>

Date	Data points containing amendments or additions and brief description	Document identifier and version number

<sup>1</sup> It is suggested that applicants adopt a similar approach to showing revisions and version history as outlined in SANCO/10180/2013 Chapter 4 How to revise an Assessment Report

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## CA 9 LITERATURE DATA

A literature search was carried out covering the four common triazole metabolites, 1,2-4-triazole, triazole alanine, triazole acetic acid and triazole lactic acid, as required according to Article 8(5) of Regulation 1107/2009. The literature search was performed in accordance to the provisions of the EFSA Guidance “Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009”.

The objective of this literature search document was as a supplement to the previous literature search document, Version 6 of 13<sup>th</sup> May 2019 which covers the period 9<sup>th</sup> June 2004 until 10<sup>th</sup> April 2019. This previous document has been submitted to a number of EU Member States with various parent triazole dossiers from 2014 onwards.

This current literature search covers the period 10<sup>th</sup> April 2019 – 23<sup>rd</sup> March 2020 and was the assessment of scientific peer-reviewed open literature dealing with the four common triazole metabolites listed above.

### History

This literature search is performed for and owned by the Triazole Derivatives Metabolite Group (TDMG), a task force consisting of five companies, BASF SE, Bayer CropScience AG, Dow AgroScience LLC Isagro S.p.A. and Syngenta Crop Protection AG. These five companies have interests in a number of parent triazole fungicide compounds. The parent triazoles have common metabolites and historically the companies have formed a cooperation to share data and avoid duplicate testing. The TDMG also license data to license holders particularly to avoid duplicate animal testing.

### CA 9.1 Summary

This report summarises the search for “scientific peer-reviewed open literature on the four common triazole metabolites, 1,2-4-triazole (124T), triazole alanine (TA), triazole acetic acid (TAA) and triazole lactic acid (TLA), dealing with all sections of the dossier and (together with the previously submitted literature search version 6) published within the last sixteen years before the date of submission of the dossier” in accordance with Article 8(5) of Regulation (EC) No. 1107/2009. This version covers strictly from **10<sup>th</sup> April 2019 until 23<sup>rd</sup> March 2020**.

The exact search strategy is detailed in Appendix 1 and 2 but a summary of the methodology employed is given below.

- A very broad search was conducted in a number of scientific source databases (detailed in Appendix 2) for using the search terms listed in Appendix 1.
- Duplicate titles from within each database were automatically removed from the output.
- A rapid relevance assessment of the titles was conducted to remove any additional duplicates between databases and any obviously irrelevant titles (where enough information was available from the title alone).
- Summary abstracts were requested for the remaining titles and a further rapid relevance assessment was conducted where again any clearly irrelevant titles were removed.

- A detailed assessment of the full-text documents for the remaining publications was conducted using the criteria listed in Appendix 1 developed for study relevance
- Any relevant papers were highlighted and assessed for reliability.

An overview of the results is summarised in the table below.

<b>Summary of the review</b>	<b>Number</b> <b>Search: 10th April 2019 until 23<sup>rd</sup> March 2020</b>
Total number of summary records retrieved after removing duplicates from all database searches	239
Total number of summary records per dossier section search filter	Physical chemistry 25 Toxicology 60 Metabolism and residues 52 Ecotoxicology 13 Environmental fate 89
Number of summary records excluded after rapid assessment for relevance (by title/abstract)	238
Number of studies excluded from the risk assessment after detailed assessment of full-text documents (i.e. not relevant)	1
Number of studies not excluded for relevance after detailed assessment (i.e. reliable studies and studies of unclear reliability)	0

\* aligned with EFSA Journal 2011; 9(2):2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles, and titles plus abstracts.

## **CA 9.2 Search strategy**

The search strategy is as outlined below with further detail specified, per section, in Appendix 1 and 2.

**CA 9.2.1 Date of the search**

The table below gives the relevant dates of the searches conducted from Version 6 of this document and this update Version 7:

<b>Previous literature search document</b>	<b>Version 6</b>
Date of search 1	10 <sup>th</sup> January 2004 - 10 <sup>th</sup> January 2014
Date of search 2	10 <sup>th</sup> June 2015
Date span of the search 2	10 <sup>th</sup> January 2014 – 9 <sup>th</sup> June 2015
Date of search 3	19 <sup>th</sup> November 2015
Date span of the search 3	10 <sup>th</sup> June 2015 – 18 <sup>th</sup> November 2015
Date of search 4	20 <sup>th</sup> January 2016
Date span of the search 4	19 <sup>th</sup> November 2015 – 20 <sup>th</sup> January 2016
Date of search 5	15 <sup>th</sup> August 2016
Date span of the search 5	20 <sup>th</sup> January 2016 – 15 <sup>th</sup> August 2016
Date of search 6	19 <sup>th</sup> March 2018
Date span of the search 6	15 <sup>th</sup> August 2016 – 19 <sup>th</sup> March 2018
Date of search 7	7 <sup>th</sup> December 2018
Date span of the search 7	20 <sup>th</sup> March – 7 <sup>th</sup> December 2018
Date of search 8	10 <sup>th</sup> April 2019
Date span of the search 8	8 <sup>th</sup> December 2018 – 10 <sup>th</sup> April 2019
<b>Current Literature search document</b>	<b>Version 7</b>
Date of search 9	23 <sup>rd</sup> March 2020
Date span of the search 9	10 <sup>th</sup> April 2019 – 23 <sup>rd</sup> March 2020

The previous literature search documents have been submitted to support the review of TDMG parent triazole active substances in various EU Member States as detailed below.

<b>Date</b>	<b>Parent Triazole Submission</b>	<b>RMS</b>
July 2014	Propiconazole	Finland
Oct 2015	Metconazole	Belgium / UK
Oct 2015	Triticonazole	Austria / UK
Jan 2016	Prothioconazole	UK / France
Mar 2016	Mefentrifluconazole	UK / France
June 2016	Difenconazole	Spain / UK

February 2017	Tebuconazole	UK / Denmark
June 2019	Tetraconazole	France /Germany
	Penconazole	Norway / Germany
August 2020	Paclobutrazol	Austria / Romania

### CA 9.2.2 Time window of the literature search

In line with Article 8(5) of Regulation (EC) No 1107/2009 scientific peer-reviewed open literature from 2004 onwards covering more than just the last 10 years prior to the various parent triazole active substance dossier submission dates has been assessed. The initial searches until April 2019 have been summarised in the literature search document Version 6. This document is Version 7 just covering the top up search.

Literature search document	Version 7
Date of search 9	23 <sup>rd</sup> March 2020
Date span of the search 9	10 <sup>th</sup> April 2019 – 23 <sup>rd</sup> March 2020

### CA 9.2.3 Bibliographic Databases used in the literature review

The bibliographic databases selected cover a wide range of scientific fields and include journals and chapters in books or symposia, conference proceedings, dissertations and reports. All databases were searched using the search strategy given in CA 9.2 combined with the end point specific search terms given in CA 9.2.5 as a single concept approach.

Databases	Frequency of updates	Date of last update
<b>MEDLINE</b>	1948 to present; 5 times each week with an annual reload	2020-03-22
<b>EMBASE</b>	1974 to present; Updated daily	2020-03-20
<b>ESBIOBASE</b>	1994 to present; Updated weekly	2020-03-19
<b>AGRICOLA</b>	1970 to present; Updated monthly	2020-03-09
<b>BIOSIS</b>	1926 to present; Updated weekly	2020-03-18
<b>CABA</b>	1973 to present; Updated weekly	2020-03-18
<b>HCAPLUS/</b>	1907 to present; Updated daily	2020-03-22
<b>FSTA</b>	1969 to present; Updated weekly	2020-03-19
<b>GEOREF</b>	1669 to present; Updated twice a month	2020-03-13
<b>TOXCENTER</b>	1907 to present; Updated weekly	2020-03-17
<b>PQSCITECH</b>	1962 to present; Updated monthly	2020-02-26
<b>SCISEARCH</b>	1974 to present; Updates weekly	2020-03-16
<b>ANABSTR</b>	1980 to present; Updated weekly	2020-03-19

## CA 9.2.4 Input parameters for literature search

Detailed search parameters - Chemical Names and CAS numbers. The following were searched for;

1,2,4-Triazole (CAS: 288-88-0)

Chemical Names:

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -hydroxy-, (CA Index Name)

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, (CA Index Name)

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, ( $\pm$ )-

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, (S)-

1H-1,2,4-Triazole-1-propionic acid,  $\alpha$ -amino-, L- (8CI)

1H-1,2,4-Triazole-1-acetic acid (CA Index Name)

1,2,4-Triazol-1-ylacetic acid

1,2,4-Triazole-1-acetic acid

1H-1,2,4-Triazol-1-ylacetic acid

2-(1,2,4-Triazol-1-yl) acetic acid

2-(1H-1,2,4-Triazol-1-yl) acetic acid

1H-1,2,4-Triazole (CA Index Name)

s-Triazole (8CI)

3,4-Diazapyrrole

4H-1,2,4-Triazole

Using these following parameters dealing with the structure specific search terms;

- L1 QUE SPE=ON ABB=ON PLU=ON (288-88-0 OR 1450828-63-3 OR 28711-29-7 OR 333354-47-5 OR 86362-20-1 OR 114419-45-3 OR 4819-36-7 OR 25167-73-1 OR 27236-77-7 OR 116421-29-5 OR 1001118-18-8)
- L2 QUE SPE=ON ABB=ON PLU=ON (1,2,4-TRIAZOL-1-YLACETIC ACID OR 1(W)2(W)4(W)TRIAZOLE(W)1(W)ACETIC(W)ACID) OR (1H(2W)1(W)2(W)4(W)TRIAZOL(W)1(W)YLACETIC(W)ACID) OR (2(2W)1(W)2(W)4(W)TRIAZOL(W)1(W)YL(W)ACETIC(W)ACID) OR (2(2W)1H(2W)1(W)2(W)4(W)TRIAZOL(W)1(W)YL(W)ACETIC(W)ACID)
- L3 QUE SPE=ON ABB=ON PLU=ON ((1H(2W)1(W)2(W)4(W)TRIAZOLE) OR (S(W)TRIAZOLE)) OR ((3(W)4(W)DIAZAPYRROLE) OR (4H(2W)1(W)2(W)4(W)TRIAZOLE)) OR (3(2W)1H(W)1(W)2(W)4(W)TRIAZOL#(W)1(W)YL(W)ALANINE)
- L4 QUE E=ON ABB=ON PLU=ON (1H(2W)1(W)2(W)4(W)TRIAZOL#(W)1(W)PROPANOIC(W)ACID) OR (1H(2W)1(W)2(W)4(W)TRIAZOL#(W)1(W)PROPIONIC(W)ACID)
- L5 QUE SPE=ON ABB=ON PLU=ON ((2(W)HYDROXY(W)3)(2W)(L4))
- L6 QUE SPE=ON ABB=ON PLU=ON ((ALPHA(W)(HYDROXY OR AMINO))(3A)(L4))
- L7 QUE SPE=ON ABB=ON PLU=ON (HYDROXY(4W)TRIAZOLE(1W)PROPANOIC ACID OR AMINO(4W)TRIAZOLE(1W)PROPANOIC ACID OR TRIAZOLE(1W)ACETIC ACID OR TRIAZOL(1W)YLACETIC ACID OR TRIAZOL(1W)YL ACETIC ACID OR AMINO(4W)TRIAZOLE(1W)PROPIONIC ACID OR DIAZAPYRROLE OR NSC(W)83128 OR NSC83128)

### **CA 9.2.5 Endpoint specific search terms**

The endpoint specific search terms were specified for each dossier section and are clearly stated in Appendix 2.

### **CA 9.2.6 Filters**

The four common triazole metabolites 124T, TA, TAA and TLA were searched for as described above and in Appendix 1 and 2 across multiple data bases. The results, returned from the “single concept search” for each database, were then checked for duplicates which were removed. The searches were then filtered using the search terms specific to a technical aspect, namely physical chemical properties, toxicology, metabolism and residues, ecotoxicology and environmental fate (refer to Appendix 1 and 2).

## CA 9.3 Search results

The results for the top up search of the four triazole metabolites are detailed in Table 9.3-1. The results split across the databases are detailed in Table 9.3-2.

Table 9.3-1.

Data requirement(s) captured in the search	Physical Chemistry	Toxicology	Metabolism and Residues	Ecotoxicology	Environmental Fate
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	25	60	52	13	89
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	25	60	52	13	88
Total number of <i>full-text</i> documents assessed in detail*	0	0	0	0	1
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	0	0	0	1
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	0

Table 9.3-2

Dossier Section	Database	Number of unique answers retrieved (after removal of duplicates and manual removal of false positives due to the query being too unspecific*).
Physical Chemistry	CAplus	20
	Medline	1
	SciSearch	1
	Toxcenter	3
Toxicology	CAplus	24
	Medline	10
	SciSearch	2
	Toxcenter	22
	Agricola	1
	CABA	1
Metabolism and Residues	CAplus	28
	Medline	8
	SciSearch	2
	Toxcenter	12
	Agricola	1

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	CABA	1
Ecotoxicology	CAplus	4
	Medline	4
	BIOSIS	1
	Toxcenter	3
	CABA	1
Environmental Fate	CAplus	64
	Medline	7
	SciSearch	2
	Toxcenter	14
	CABA	1
	Agricola	1

## CA 9.4 Evaluation

The evaluation of the search results is performed according to the EFSA guidance document (EFSA Journal 2011;9(2):2092).

Studies **relevant** to the dossier are those that inform one or more data requirement(s), including hazard identification, hazard characterisation and exposure assessment, for the active substance under assessment, its relevant metabolites, or plant protection products.

This section considers the physical chemical properties, toxicology, metabolism and residue, ecotoxicology and environmental fate data requirements for chemical active substance and plant protection products and other data requirements for which information may have a direct or indirect effect on overall risk assessment (only data requirements under these points having a direct impact on the risk assessment need to be considered).

If a detailed assessment of the study/article was required to determine relevance, the full paper has been provided in KCA Section 9 (and is listed in LCA Section 9).

In case of relevant studies/articles, the full paper is provided and a detailed summary is included in the MCA Section 6.

The scientific peer-reviewed open literature provided with this dossier is protected by Copyright. Syngenta, the lead applicant, has secured the right to use, reproduce and share copies of these publications with the required Regulatory Authorities for the purpose of Regulatory decision making. Further use, reproduction or sharing of these copies by a Rapporteur Member State or EFSA for any purpose other than this is prohibited. Should a Regulatory Authority require a copy of the literature provided, a request should be submitted to the applicant.

### CA 9.4.1 Rapid assessment

For the initial rapid assessment, titles were first scanned to identify whether the studies were obviously not relevant. If enough information was available from the title alone to determine that studies were clearly irrelevant, the titles were disregarded. Summary abstracts were then requested for the remaining titles and a further rapid assessment was conducted, where again any irrelevant studies were removed. Any studies clearly not in the remit of this submission or unambiguously belonging to other sections were excluded.

For the rapid assessment of titles and abstracts the criteria listed in Appendix 1 were applied to assess the publication as being clearly irrelevant – if it was not clear from the title or abstract whether the paper was relevant then the full paper was read and detailed in Table 9.4.2-1.

Table 9.4.1-1.

Data requirement(s) captured in the search	Physical Chemistry	Toxicology	Metabolism and Residues	Ecotoxicology	Environmental Fate
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	25	60	52	13	89
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	25	60	52	13	88
Total number of <i>full-text</i> documents assessed in detail*	0	0	0	0	1

So from a total of 239 summary records retrieved, all were excluded except just one from the environmental section that was deemed in need of full assessment.

#### CA 9.4.2 Detailed assessment

With 238 articles in total excluded at the rapid assessment, one article in total from the environmental fate section remained which underwent detailed assessment based on the full-text document. This one article was evaluated for relevance using the relevance criteria mentioned in Table Appendix 1.5: List of Criteria for relevance for Environmental Fate. The evaluation is tabulated below:

**Table 9.4.2-1: Publications excluded from the risk assessment after detailed assessment of full-text documents**

Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)
<b>Top-up search conducted in 9<sup>th</sup> June 2019 until 23<sup>rd</sup> March 2020</b>				
Jungmin, Yi, Seung Wook Baek & Sung June Cho	2019	Experimental Study on Decomposition and Evaporation Characteristics of N,N,N',N'-Tetramethylethylenediamine and 1,2,4-Triazole	Energies 12(17-p-3208)p	Paper discusses the use and behaviour of Tetramethylethylenediamine mixed with 1,2,4-Triazole as a hypergolic biopropellant in liquid rocket engines. It does not consider any environmentally relevant factors related to the fate of triazoles in the environment and is there considered not relevant for inclusion in the dossier.

**Table 9.4.2-2: Relevant studies included in the dossier after detailed assessment of full-text documents for relevance: sorted by data requirement(s)**

Data requirement (indicated by the corresponding CA and CP data point number)	Author(s)	Year	Title	Source
No Paper was included after detailed assessment				

**Table 9.4.2-3: Relevant studies included in the dossier after detailed assessment of full-text documents for relevance: sorted by author(s)**

Author(s)	Data requirement (indicated by the corresponding CA and CP data point number)	Year	Title	Source
No Paper was included after detailed assessment				

## **Overall Conclusion of Results**

No relevant studies or papers were found from all the searches performed on the common triazole metabolites to date. The one paper warranting further attention was examined in detail and also assessed to be non-relevant.

## Appendix 1 Criteria for relevance

### Appendix 1.1: List of Criteria for relevance for Product Chemistry studies

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
Physical and chemical properties (CA 2.1 to 2.15)	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust (e.g. pre-treatment details, characterisation of physico-chemical parameters, replication, statistical methods, and appropriate sampling regime).</li> <li>3. Study conditions should not differ significantly from recommended protocols* and internationally agreed tests methods (CIPAC MT and OECD methods).</li> <li>4. Study conditions should not interfere with the interpretation of the study results.</li> <li>5. End-points or positions stated as a result of the study significantly affect the proposed risk assessment in the dossier.</li> </ol>

### Table Appendix 1.2: List of Criteria for relevance for toxicological and toxicokinetic studies

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
*CA 5.1 ADME studies	<ol style="list-style-type: none"> <li>1. Well identified test material including purity and impurity profile</li> <li>2. Relevant test species e.g. rodent – rat/mouse – non-rodent – dog</li> <li>3. Relevant endpoint e.g. ADME measurement or metabolite identification</li> <li>4. Well described condition of the test and quantitative assessment of results to substantiate and evaluate whether the study conclusions and endpoints are robust</li> </ol>
*CA 5.2 Acute toxicity	<ol style="list-style-type: none"> <li>1. Well identified test material including purity and impurity profile</li> <li>2. Test species likely to be relevant to mammalian toxicology assessment – rats and mice, rabbit, guinea pig</li> <li>3. Relevant route of administration for risk assessment</li> <li>4. Describe observations, examinations, analyses performed or necropsy</li> <li>5. Different outcome to those studies currently reported</li> </ol>
*CA 5.4 Genotoxicity	<ol style="list-style-type: none"> <li>1. Well identified test material including purity and impurity profile</li> <li>2. Relevant cell line or species used</li> <li>3. “validated” or widely used test method</li> <li>4. In vitro observation not addressed by in vivo data (including tissue specific effects)</li> <li>5. In vivo effect in somatic or germs cells in relevant species</li> <li>6. Relevant route of exposure to test substance</li> <li>7. Contradicts submitted studies, impacts WoE.</li> <li>8. Recognised methods for scoring studies outcomes used where applicable</li> </ol>
*CA 5.3, 5.5, 5.6, 5.7, 5.8.1 Short term, chronic, reproductive and neurotoxicity, studies on metabolites	<ol style="list-style-type: none"> <li>1. Well identified test material including purity and impurity profile</li> <li>2. Test species likely to be relevant to mammalian toxicology assessment – rodents rats and mice, non- rodent dog is preferred</li> <li>3. Sufficient number of animals per group to establish statistical significance</li> <li>4. Test several dose levels (minimum 3)</li> <li>5. Relevant route of administration for risk assessment</li> <li>6. Include negative control (preferable)</li> <li>7. Establish dose response</li> <li>8. Describe observations, examinations, analyses performed or necropsy</li> <li>9. Contradicts submitted studies and/or changes key endpoints</li> </ol>

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
CA 5.8.2 Supplementary studies on the active substance	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. Unusual routes of exposure acceptable as they may introduce important information on other possible toxicological effects</li> <li>3. Regulatory use usually limited to addressing species sensitivity /safety factors etc.</li> <li>4. Examples of studies               <ol style="list-style-type: none"> <li>a. Effects of combined exposures</li> <li>b. Hormonal effects (if not guideline studies or included in 5.8.3)</li> <li>c. Hypersensitivity of specific sub-populations</li> <li>d. Gender and age variation in susceptibility (if not included in 5.6 Reproductive studies)</li> <li>e. Mode of action investigations</li> </ol> </li> </ol>
CA 5.8.3 Endocrine disrupting properties	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. All studies considered relevant at this stage – need to be checked for reliability</li> </ol>
CA 5.9 Medical data (including epidemiology) CP 7.2 to 7.4	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. All records considered relevant at this stage - need to be checked for reliability</li> </ol>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

**Table Appendix 1.3: List of Criteria for relevance for Metabolism and Residues**

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
<b>Metabolism and residues data (CA 6.1 to 6.9)</b>	
<b>Summary</b>	<p>The relevance criteria applied to determine whether a literature reference was relevant for the residues and metabolism sections of the active substance renewal process are given below.</p> <ol style="list-style-type: none"> <li>1. Well defined test material. e.g. are purity and batch data provided?</li> <li>2. Applicable test species. e.g. is the crop a representative use; were relevant animal commodities used?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. did the study meet the relevant guidelines?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants e.g. was the compound used previously at the trial site; was the animal feed free from the compound?</li> <li>5. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. were storage intervals recorded; are weather conditions and plot histories available?</li> <li>6. Validated Analytical methodology employed. e.g. were control samples used, acceptable recoveries obtained, clear example chromatograms given?</li> <li>7. Study conditions do not interfere with the interpretation of the study results. e.g. starting processing material residue is robust and there is measurable residue in processed products?</li> </ol>
<b>CA 6.1 Storage Stability of Residues (plant and animal)</b>	<p><u>Storage Stability Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material. e.g. are purity and batch data provided?</li> <li>2. Applicable test species.</li> </ol>

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<p>e.g. is the crop a representative use; were relevant animal commodities used?</p> <ol style="list-style-type: none"> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols, and must be relevant to those in the submission. e.g. did the study meet the relevant guidelines and GAP?</li> <li>4. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. were storage intervals recorded; are weather conditions and plot histories available?</li> <li>5. Validated analytical methodology employed e.g. were control samples used, acceptable recoveries obtained, clear example chromatograms given?</li> <li>6. Study conditions do not interfere with the interpretation of the study results. e.g. starting processing material residue is robust and there is measurable residue in processed products?</li> </ol>
<p><b>CA 6.2 Metabolism, distribution and Expression of Residues (plant and animal)</b></p> <p><b>CA 6.6.2 Metabolism and Distribution in Succeeding Crops</b></p>	<ol style="list-style-type: none"> <li>1. Well defined test material. e.g. if radiolabelled material was used, was an appropriate isotope used?</li> <li>2. Applicable test species. e.g. ruminant, poultry, etc.?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols, and must be relevant to those in the submission. e.g. is the application rate relevant and equivalent to maximum seasonal rate on rotated crops?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants e.g. is plot history supplied?</li> <li>5. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. Were metabolites identified by appropriate techniques?</li> <li>6. Validated analytical methodology employed. e.g. were representative clear chromatograms provided to support metabolite identification?</li> <li>7. Study conditions do not interfere with the interpretation of the study results. e.g. if the test item is photolabile was the study conducted outdoors?</li> </ol>
<p><b>CA 6.3 Magnitude of Residues Trials in Plants</b></p>	<p>Published monitoring reports were not considered relevant due to the fact that it would not be possible to determine whether or not a misuse scenario had resulted in the residue levels reported.</p> <p><u>Crop Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Applicable test species</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols.</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>6. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</li> <li>7. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Notes for above criteria</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content) e.g. was the formulation comparable to the proposed representative formulation?</li> <li>2. Applicable test species e.g. is it a representative use crop?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. Is the GAP relevant? Correct rate, application method, interval, PHI, spray volume, BBCH (if applicable), region, indoor/outdoor, control samples taken?</li> </ol>

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<p>e.g. were weather details available?  e.g. were the control plots well separated from treated plots?  e.g. was the field phase conducted according to GLP?  e.g. were samples stored deep frozen? Were appropriate numbers of samples taken, e.g. 2kg of apples?  e.g. was appropriate sampling methodology employed? Was the sample handling traceable?</p> <p>4. Trial site/test system not previously exposed to the test material or other contaminants.  e.g. Plot history supplied, e.g. evidence that compound not used that year or previous year, and information on other plant protection products (e.g. to check for common metabolites).</p> <p>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.  Examples as in 3 above and also, have they proposed an endpoint, e.g. MRL, what statistical methods have they used for this?</p> <p>6. Study conditions should not interfere with the interpretation of the study results.</p> <p>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.  e.g. Was a validated method used, were acceptable recoveries obtained, were control samples analysed, were control samples 'clean', were representative clear chromatograms provided, Was the analytical phase conducted according to GLP? Were all components of the residue definition analysed for? Were samples analysed within a time period covered by storage stability data?</p>
CA 6.4 Livestock Feeding Studies	<p>Same criteria as for crop studies, examples could be as above with the following additions.</p> <p><u>Livestock Feeding Studies Notes</u></p> <p>1. Well defined test material (including purity/content)  2. Applicable test species  e.g. Ruminant, poultry, pig, fish, any edible animal.</p> <p>3. Study conditions should not differ significantly from recommended protocols.  e.g. is the dosing level extreme?  e.g. was the application form appropriate, e.g. capsule?  e.g. was the number of test species correct, e.g. three cows, nine hens?  e.g. was the dosing period appropriate, e.g. minimum 28 days?  e.g. were control animals included?  e.g. were the animals healthy?  e.g. were the animals acclimatized?</p> <p>4. Trial site/test system not previously exposed to the test material or other contaminants.  e.g. is it clear that additional animal feed did not contain treated substance?</p> <p>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</p> <p>6. Study conditions should not interfere with the interpretation of the study results.</p> <p>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</p>
CA 6.5 Effects of Processing	<p><u>High Temperature Hydrolysis</u></p> <p>1. Well defined test material (including purity/content)  e.g. if radiolabelled test item was used, was an appropriate isotope used (e.g. <sup>14</sup>C and <u>not</u> <sup>3</sup>H)?  e.g. if radiolabelled test item was used, was the labelling position(s) appropriate to capture potential metabolites?  e.g. if radiolabelled test item was used, was the specific activity adequate to meet an LOQ of 0.01 mg/kg?</p>

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<p>N.B. If water solubility of test item is &lt; 0.01 mg/L then no study is required and can be deemed non-relevant</p> <ol style="list-style-type: none"> <li>2. Applicable test system e.g. Was the test undertaken in a <u>sterilised</u> buffer medium?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. Were the temperature and pH conditions applied typical of processing operations carried out on commodities relevant to the test item? e.g. were samples stored deep frozen?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust. Examples as in 3 above e.g. Were metabolites identified by appropriate techniques (e.g. co-chromatography with known standards using two dissimilar chromatographic systems or by techniques capable of positive structural identification e.g. MS, NMR)?</li> <li>6. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc. e.g. Were relevant control experiments carried out when harsher techniques (e.g. acid/base hydrolysis) were used to identify metabolites (i.e. to ensure metabolites identified are not merely artefacts)? e.g. were representative clear chromatograms provided to support metabolite identification? e.g. where sample analysis exceeded 6 months from sample collection was storage stability of samples demonstrated?</li> <li>7. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Field Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Applicable test species</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols.</li> <li>4. Trial site not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>6. Study conditions should not interfere with the interpretation of the study results.</li> <li>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</li> </ol>
<b>CA 6.6 Residues in Rotational crops</b>	Same criteria as for crop residue studies, examples could be subtly different, e.g. acceptable PBIs, crop types, again monitoring information should not be considered relevant.
<b>CA 6.7 Proposed residue definition and MRLs</b>	Residue definition would only be affected if data generated in another section, e.g. metabolism/tox. MRLs would only be affected if residues generated and this is covered under 6.3.
<b>CA 6.8 Proposed Safety Intervals</b>	Not required. Any animal safety reports that might affect withholding periods would be covered in the review of literature in the Toxicology Section.
<b>CA 6.9 Risk Assessment</b>	Not required – any adverse findings for the risk assessment will have to be due to a data point from one of the other sections, and are therefore covered in other sections of this document.
<b>CA 6.10 Other Studies</b>	Not required.

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

**Table Appendix 1.4: List of Criteria for relevance for Ecotoxicology studies**

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
Ecotoxicological studies (CA 8.1 to 8.9)	<p><u>Laboratory Studies</u></p> <ol style="list-style-type: none"> <li>6. Well defined test material (including purity/content)</li> <li>7. Number of organisms per group sufficient to establish a statistical significance</li> <li>8. Applicable test species</li> <li>9. Test organisms are not previously exposed to the test material or other contaminants</li> <li>10. Several dose levels tested, at least 3, including a negative control, to establish a dose-response, unless the study design is specifically a limit test. Control must be run concurrently with treatments and mortality to be within test validity criteria.</li> <li>11. Exposure route is clearly defined, is environmentally relevant and, if appropriate, suitably quantified.</li> <li>12. If conducted, analytical confirmation of dosing or sufficient information provided to determine concentrations were within acceptable range (e.g. 80-120%) of nominal targets.</li> <li>13. Effects are related to single test item, and a quantitative relationship exists between the reported endpoint and risk assessment endpoints of growth, mortality, behaviour and/or reproduction.</li> <li>14. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>15. Study conditions should not differ significantly from recommended protocols.</li> <li>16. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Field Studies</u></p> <ol style="list-style-type: none"> <li>17. Appropriate and relevant geoclimatic conditions (setting), appropriate application method and rates (exposure) and observation data (biological relevance) to derive endpoints.</li> <li>18. Well defined test material (including purity/content)</li> <li>19. Applicable test species</li> <li>20. Exposure route is clearly defined, is environmentally relevant and, if appropriate, suitably quantified.</li> <li>21. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust (e.g. pre-treatment details, characterisation of physico-chemical parameters, replication, statistical methods and appropriate sampling regime).</li> <li>22. Study conditions should not differ significantly from recommended protocols, if available for field study.</li> </ol> <p>Study conditions should not interfere with the interpretation of the study results</p>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

**Table Appendix 1.5: List of Criteria for relevance for Environmental Fate**

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
Route and rate of degradation in soil – Laboratory Studies – aerobic and anaerobic, parent and metabolites CA 7.1.1 CA 7.1.1.1 CA 7.1.1.2	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Soil(s) must be agricultural and relevant for the EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 307)</li> <li>3. Soil collection, preparation and storage did not differ significantly from recommended protocols</li> <li>4. Test soils had not previously been exposed to the test material or structural analogues.</li> <li>5. Experimental conditions did not differ significantly from recommended protocols e.g. temperature and moisture</li> <li>6. Application rate is within the range of the proposed use and can be verified from the data (time zero samples)</li> <li>7. Sufficient number of samples taken to determine kinetics (minimum 5)</li> <li>8. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods</li> <li>9. Analytical method well described, LOD/LOQ at appropriate level</li> <li>10. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%.</li> <li>11. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> <li>12. Identification of 'new' metabolites is robust with appropriate details of method used</li> <li>13. Anaerobic conditions are verified by measurement</li> </ol>
Route and rate of degradation in soil – Field Studies CA 7.1.2.2	<ol style="list-style-type: none"> <li>1. In addition to criteria under laboratory route and rate:</li> <li>2. Field site(s) must be geoclimatically relevant for the EU</li> <li>3. Adequate weather data available to verify relevance of study</li> <li>4. Application technique relevant to proposed use (foliar, ST granule etc)</li> <li>5. Sufficient sampling detail and description of sample handling prior to analysis</li> <li>6. Initial and procedural recoveries are adequate to support the conclusions, e.g. 70-120%.</li> </ol>
Soil photolysis CA 7.1.1.3	In addition to criteria under laboratory route and rate: <ol style="list-style-type: none"> <li>1. Light source was suitable with details of spectrum and intensity available</li> <li>2. Dark control included and reported</li> </ol>
Mobility studies Adsorption, desorption – parent and metabolites CA 7.1.3 Column or TLC leaching CA 7.1.4.1.1, CA 7.1.4.1.2	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Soil(s) must be agricultural and relevant for EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 106)</li> <li>3. Soil collection, preparation and storage did not differ significantly from recommended protocols</li> <li>4. Test soils had not previously been exposed to the test material or structural analogues.</li> <li>5. Experimental conditions did not differ significantly from recommended protocols</li> <li>6. Application rate is appropriate to the proposed use and can be verified from the data</li> <li>7. Sufficient number of samples taken to determine isotherm (if done)</li> <li>8. Stability of the test item in the system was demonstrated</li> <li>9. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods</li> <li>10. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%</li> <li>11. Analytical method well described, LOD/LOQ at appropriate level</li> </ol>

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
	12. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included
Lysimeter studies CA 7.1.4.2	In addition to criteria under laboratory route and rate:  1. Field site(s) must be geoclimatically relevant for the EU 2. Adequate weather data available to verify relevance of study. Combined rainfall/irrigation sufficient to meet guideline requirements 3. Minimum 1 m depth soil monolith 4. Study continued for sufficient years to support the conclusions
Field leaching CA 7.1.4.3.	In addition to criteria under laboratory route and rate:  1. Field site(s) must be geoclimatically relevant for the EU 2. Adequate weather data and groundwater data (depth, direction) available to verify the validity of study 3. Installation and operation of lysimeters and/or wells and samplers follows recommended protocols 4. Study continued for sufficient years to support the conclusions
Hydrolysis CA 7.2.1	1. Well defined test material (including purity/content) 2. Experimental conditions should not differ significantly from recommended protocols 3. Application rate is within an acceptable the range (e.g. consider solubility) and can be verified from the data (time zero samples) 4. Sufficient number of samples taken to determine kinetics (minimum 5) 5. Analytical method well described, LOD/LOQ at appropriate level 6. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. >90%. 7. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included 8. Identification of 'new' metabolites is robust with appropriate details of method used
Aqueous photolysis CA 7.2.1.2	In addition to criteria under hydrolysis:  1. Light source was suitable with details of spectrum and intensity available 2. Dark control included and reported
Degradation in aquatic systems CA 7.2.2	1. Well defined test material (including purity/content) 2. Water(s) and sediment(s) must be from an agricultural area and relevant for the EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 308) 3. Water/sediment collection, preparation and storage do not differ significantly from recommended protocols 4. Experimental conditions do not differ significantly from recommended protocols e.g. temperature and aeration 5. Application rate is within the range of the proposed use and can be verified from the data (time zero samples) 6. Sufficient number of samples taken to determine kinetics (minimum 5) 7. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods 8. Analytical method well described, LOD/LOQ at appropriate level 9. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
	<ol style="list-style-type: none"> <li>10. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%</li> <li>11. Identification of 'new' metabolites is robust with appropriate details of method used</li> <li>12. Anaerobic conditions are verified by measurement</li> </ol>
Degradation in the saturated zone CA 7.2.3	<ol style="list-style-type: none"> <li>1. For laboratory studies refer to criteria under laboratory route and rate</li> <li>2. Field site(s) must be geoclimatically relevant for the EU</li> <li>3. Adequate site characterisation data available e.g. soils, geology, hydrology</li> <li>4. Installation of samplers e.g. wells, lysimeters follows recommended protocols</li> <li>5. Analytical method well described, LOD/LOQ at appropriate level</li> <li>6. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> </ol>
Route and rate of degradation in air CA 7.3.1	<ol style="list-style-type: none"> <li>1. Experimental conditions or calculations differ significantly from recommended protocols</li> <li>2. Analytical method well described, LOD/LOQ at appropriate level</li> <li>3. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> </ol>
Monitoring CA 7.5	<ol style="list-style-type: none"> <li>1. Site(s) or areas must be geoclimatically relevant for the EU</li> <li>2. Adequate site characterisation data available e.g. soils, geology, hydrology</li> <li>3. Installation of samplers e.g. wells, lysimeters follows recommended protocols OR adequate description of wells is available (depth of well, length of screen, depth of screen opening, depth of groundwater)</li> <li>4. Appropriate sampling methodology.</li> <li>5. Analytical method well described, LOD/LOQ at appropriate level</li> <li>6. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. suitable blank controls included</li> <li>7. For surface water: description of sampling methodology and handling of detects (peaks, interpolated time-step?), linked to rainfall intensity and volume). Discharge volumes, catchment drained area.</li> </ol>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

## Appendix 2 Detailed Search Parameters for each named Dossier section

### Appendix 2.1 Product Chemistry

**Table 2.1.1: Detailed Search Parameters for Product Chemistry studies (CA 2.1 to 2.15)**

Search Strategy	
Chemical Names:	
1,2,4-Triazole (CAS: 288-88-0)	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE ((VAPOUR OR VAPOR) (3A) PRESSURE?) OR SOLUBILITY?)
L2	QUE ((PARTITION(3A) COEFF?) OR EXPLOSIV? OR OXIDI!NG?)
L3	QUE (OXIDI!ED? OR FLAMMAB? OR (FLASH(3A) POINT?))
L4	QUE (VOLATIL? OR VISCOS? OR VISCOUS? OR (LOG(W) KOW))
L5	QUE (VAPORI!AT? OR VAPOURI!AT? OR VAPOR!ED? OR VAPOURI!ED?)
L6	QUE ((SPECIFIC(3A) GRAVITY?) OR ((MELTING OR BOILING) (2W) POINT))
L7	QUE (EVAPORAT? OR DENSITY OR LOGP OR (LOG(W) P) OR KOC)
L8	QUE ((DIFFUSION(3A) COEFF?) OR (DISSOCI?(3A) CONSTANT?))
L9	QUE (ANTIINFLAMM? OR ANTIIGNIT? OR IGNIT? OR COMBUST?)
L10	QUE ((L1 OR L2 OR L3) OR (L4 OR L5 OR L6) OR (L7 OR L8 OR L9))

**Table 2.1.2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.	
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)	
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.	
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.	
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.	
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.	

Provider	Database	Justification	Limits applied
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily	
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.	
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)	
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.	
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly	
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.	

Provider	Database	Justification	Limits applied
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly. (Searches 1-5 only)	
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.	
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.	

\* Total number of summary records retrieved after removing duplicates

**Table 2.1.3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.1.4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.1.5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.2 Toxicology

**Table 2.2.1: Detailed Search Parameters for Toxicological and Toxicokinetic studies (CA 5.1 to 5.9)**

Search Strategy	
Chemical Names:	
1,2,4-Triazole (CAS: 288-88-0)	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE (MUTAG? OR CANCER? OR TERATO? OR GENETOX? OR CARCIN?)
L2	QUE (TUMOUR? OR TUMOR? OR CYTOTOX? OR GENOTOX? OR MELANOM?)
L3	QUE (NEUROTOXI? OR LD50 OR IC50 OR ((LD OR IC)(W)50))
L4	QUE (((LONG OR SHORT)(W)TERM?)(L)(EFFECT? OR STUD? OR TOXIC?))
L5	QUE (ENDOCRIN? OR INHALAT? OR IRRITAT? OR REPROTOX?)
L6	QUE (PERCUTANEOU? OR DERMAL? OR ORAL? OR INTOXICAT? OR INGEST?)
L7	QUE (((REPRODUCT? OR EMBRYO? OR FOET? OR DEVELOP?)(5A)TOXI?))
L8	QUE ((ACUTE? OR CHRONIC?)(5A)(EFFECT? OR TOXIC? OR TOXIN#))
L9	QUE (GIRL# OR CHILD OR CHILDREN OR PATIENT# OR HUMAN# OR MAN)
L10	QUE (MEN OR WOM!N OR BOY# OR WORKER# OR OPERATOR# OR FARMER#)
L11	QUE (APPLICATOR# OR PERSONNEL? OR WORKFORCE OR EMPLOYEE#)
L12	QUE (MAMMAL? OR RODENT# OR RAT OR RATS OR MOUSE OR MICE)
L13	QUE (ACCIDENT? OR POISON? OR ALLERG? OR EXPOSURE? OR EXPOSE#)
L14	QUE (OCCUPAT? OR EPIDEMIOL? OR SENSITIZ? OR SENSITIS?)
L15	QUE ((HEALTH OR ADVERSE)(5A)(EFFECT# OR RISK#))
L16	QUE (MEDICAL OR (FIRST(W)AID) OR (TOXIC?(3A)STUD?) OR THERAPE?)
L17	QUE (TOXICOKINETIC# OR EXTRACTAB? OR (RADIO(W)LABEL?))
L18	QUE (DOG# OR (GUINEA(W)PIG#) OR RABBIT# OR SKIN? OR EYE#)
L19	QUE (HAND# OR DERMAL? OR BYSTANDER# OR RESIDENT#)
L20	QUE ((ROTAT? OR SUCCEEDING OR FOLLOWING)(3A)CROP#)
L21	QUE ((DIETARY OR CONSUM? OR CUMULAT? OR AGGREGAT?)(5A)RISK?)
L22	QUE (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR L17 OR L18 OR L19 OR L20 OR L21)

## Search Strategy

- L2 QUE SPE=ON ABB=ON PLU=ON ABNORMAL BEHAVIOUR OR ABORTION OR ACCEPTABLE DIETARY INTAKE OR ACCEPTABLE OPERATOR EXPOSURE LEVEL OR ACUTE DERMAL APPLICATION OR ACUTE DERMAL TOXICITY OR ACUTE EFFECT OR ACUTE EXPOSURE OR ACUTE ORAL TOXICITY OR ACUTE REFERENCE DOSE
- L3 QUE SPE=ON ABB=ON PLU=ON ACUTE TOXICITY OR ADDITIVE TOXICITY OR ADULT MORTALITY OR ADVERSE EFFECT OR ADVERSE EVENT OR AERIAL EXPOSURE OR AIR BLAST OR AIRBLAST OR ANORMAL BEHAVIOUR OR ASSESSMENT(1W)RISK OR AVERSIVE RESPONSE OR BBA MODEL OR BEHAVIOUR
- L4 QUE SPE=ON ABB=ON PLU=ON BEHAVIOURAL ANOMALIES OR BIO MONITORING OR BIOMONITORING OR BIRTH RATE OR BODY ORGANS OR BODY WEIGHT OR BREEDING LOSS OR BYSTANDER OR CARCINOGEN OR CARCINOGENIC OR CARCINOGENICITY OR CHANGE (1W) BODY WEIGHT OR CHEMOSIS OR CHRONIC CONCERN
- L5 QUE SPE=ON ABB=ON PLU=ON CHRONIC EFFECT OR CHRONIC STUDY OR CHRONIC TEST OR CHRONIC TOX OR CHRONIC TOXICITY OR CHRONIC TOXICOLOGICAL STUDY OR CLASTOGENICITY OR CLINICAL SIGN OR CLINICAL SYMPTOM OR CONJUNCTIVAE OR CONJUNCTIVAL CHEMOSIS OR CONJUNCTIVAL SAC
- L6 QUE SPE=ON ABB=ON PLU=ON CONSTIPATIO OR CONSUMER OR CONTACT TOXICITY OR CORNEA OR CORNEAL OPACITY OR CREATININE OR CROP INSPECTION OR CYTOPLASMIC CHANGES(1W)HEPATOCYTES OR DAMAGE TO EYES OR DEAD EMBRYO OR DEAD FETUS OR DEAD PUP OR DEATH OR DECREASE(1W)BODY LENGTH
- L7 QUE SPE=ON ABB=ON PLU=ON DERMAL OR DEVELOPMENTAL TOXICITY OR DIARRHEA OR DIE OR DIED OR DIETARY EXPOSURE OR DIETARY INTAKE OR DIETARY TOXICITY OR DIPPING OR DISLODGEABLE FOLIAR RESIDUE OR DISORIENTING OR DISTURBANCE(1W)VIABILITY OR DOG OR DUST DRIFT
- L8 QUE SPE=ON ABB=ON PLU=ON EFFECT(1W)(BODY WEIGHT OR FOOD CONSUMPTION OR BODY ORGAN) OR EMBRYO OR EMBRYOPATHY OR EMBRYOTOX OR ENDOCRINE(W)DISRUPT? OR ENDOCRINE MODULATION OR ENGINEERING CONTROL OR EPIDEMIOLOGICAL OR EPIDEMIOLOGY OR ERYTHEMA
- L9 QUE SPE=ON ABB=ON PLU=ON ESCHAR OR EUROPOEM OR EXPOSE OR EXPOSURE OR EYE IRRITATION OR FECUNDITY OR FEEDING STUDY OR FERTILITY RATE OR FETOTOX OR FETOTOXICOLOGICAL OR FETOTOXICOLOG Y OR FOETAL CROWN-RUMP LENGTH OR FOETAL DEVELOPMENT OR FOGGING OR FOLIAR DEPOSITION
- L10 QUE SPE=ON ABB=ON PLU=ON FOLIAR DISLODGEABLE RESIDUE OR GAIN(1W)BODY WEIGHT OR GASTROINTESTINAL OR GENOTOX OR GENOTOXIC OR GENOTOXICITY OR GENOTOXICOLOGICAL OR GESTATION OR GROUND BOOM OR GROUNDBOOM OR GUINEA PIG OR HAIR LOSS OR HAND TO MOUTH OR HANDHELD OR HAND-HELD
- L11 QUE SPE=ON ABB=ON PLU=ON HAZARD OR HEALTH RISK OR HEPATOTOXIN OR HERSHBERGER ASSAY OR HUMAN EXPOSURE OR HUMAN HEALTH OR HUMAN MONITORING OR IMMUNOTOXICITY OR IMPLANTATION LOSS OR INCREASE (1W) LIVER WEIGHT OR INDURATION (2W) SKIN OR INFERTILITY
- L12 QUE SPE=ON ABB=ON PLU=ON INHALATION OR INHALATORY ABSORPTION OR INHALATORY EXPOSURE OR INHALATORY RISK OR INTOXICATION OR INTRAPERITONEAL OR INTRAVENOUS OR INTRAVENOUSLY OR IRRITANT OR IRRITATING (1W)SKIN OR IRRITATION OR IRRITATION (2W)(IRIS OR SKIN)
- L13 QUE SPE=ON ABB=ON PLU=ON KNAPSACK OR LABORED BREATHING OR LACERATION (2W) SKIN OR LACTATION OR LC50 OR LD50 OR LIGHT-COLORED FECES OR LITTER SIZE OR LITTER WEIGHT OR LIVER OR LIVING PUPS OR LOCAL LYMPH NODE OR LONG-TERM EXPOSURE OR LONGTERM STUDY OR LONG-TERM STUDY
- L14 QUE SPE=ON ABB=ON PLU=ON LONGTERM TOXICOLOGICAL OR LONG-TERM TOXICOLOGICAL OR LOSS (1W)(BODY WEIGHT OR HAIR) OR MALFORMATIO N OR MAMMAL OR MAMMALIAN OR MARGIN (1W) SAFETY OR MATERNAL TOXICITY OR MATING BEHAVIOUR OR MEDICAL DATA OR METABOLIC PATH

Search Strategy	
	OR METABOLIC PATHWAY
L15	QUE SPE=ON ABB=ON PLU=ON MONKEY OR MORTALITY OR MOUSE OR MRL EXCEEDANCE OR MRL VIOLATION OR MULTIGENERATION OR MUTAGEN OR MUTAGENIC OR MUTAGENICITY OR NECROPSY OR NEUROTOXIC OR NEUROTOXICITY OR NO OBSERVED ADVERSE EFFECT LEVEL OR NO OBSERVED EFFECT LEVEL
L16	QUE SPE=ON ABB=ON PLU=ON NOAEL SUBCHRONIC DOG OR NON DIETARY EXPOSURE OR NON-DIETARY EXPOSURE OR NO-OBSERVED ADVERSE EFFECT LEVEL OR NURSING OR OBJECT TO MOUTH OR OCCUPATIONAL EXPOSURE OR OEDEMA OR OFFSPRING OR OPACITY OR OPERATOR OR ORAL ABSORPTION OR ORAL TOXICITY
L17	QUE SPE=ON ABB=ON PLU=ON ORALLY OR OVULATION OR PARENTERAL OR PARTURITION OR PASSIVE DOSIMETRY OR PATHOLOGICAL OR PATHOLOGY OR PATIENT OR PEELING (1W) SKIN OR PENETRATION FACTOR OR PERCUTANEOUS OR PERSONAL PROTECTIVE EQUIPMENT OR PHOTOTOXICITY OR PILOERECTION
L18	QUE SPE=ON ABB=ON PLU=ON PLACENTAL WEIGHT OR POISON OR POISONING OR POST-MORTEM EXAMINATIONS OR POSTNATAL OR POST-NATAL OR PREGNANCY OR PREGNANT OR PREMATURE BIRTH OR PRENATAL TOX OR PRENATAL TOXICOLOGY OR PRIMATE OR PROTECTIVE CLOTHING OR PROTECTIVE GARMENT
L19	QUE SPE=ON ABB=ON PLU=ON PROTECTIVE GLOVE OR PUBLIC HEALTH OR RABBIT OR RAT OR RE ENTRY OR REDDENING (1W) TREATMENT AREA OR REDNESS OR REDUCED BODY WEIGHT OR REDUCED BODY WEIGHT GAIN OR REENTRY OR RE-ENTRY OR REFERENCE DOSE OR RELEVANT (2W) REPRODUCTIVE SUCCESS
L20	QUE SPE=ON ABB=ON PLU=ON REPRODUCTION OR REPRODUCTIVE OR REPROTOX OR RESIDENT OR RESIDENTIAL EXPOSURE OR RESIDUE IN OR RESPIRATORY EXPOSURE OR RESPIRATORY PROTECTIVE EQUIPMENT OR RISK ASSESSMENT OR RISK (2W) (CONSUMER OR OPERATOR) OR SEXUAL
L21	QUE SPE=ON ABB=ON PLU=ON RISK (1W) SERIOUS DAMAGE (1W) EYES OR SAFE OR SAFETY OR SAFETY ASSESSMENT OR SAFETY PRECAUTION OR SECONDARY EFFECT OR SECONDARY POISONING OR SEEDTROPEX OR SENSITISATION BY SKIN CONTACT OR SENSITISER OR SENSITISING TESTS OR SENSITIZER
L22	QUE SPE=ON ABB=ON PLU=ON SHORT LONG TERM EXPOSURE OR SHORT-TERM EXPOSURE OR SHORT-TERM TOXICITY OR SHORT-TERM TOXICOLOGICAL OR SIDE EFFECT OR SIGNS (1W)(AGGRESSION OR TOXICITY) OR SKIN IRRITANT OR SKIN IRRITATION OR SKIN SENSITISATION OR SKIN SENSITISING
L23	QUE SPE=ON ABB=ON PLU=ON SKIN SENSITIZATION OR SKIN SENSITIZING OR SLIGHTLY HARMFUL OR SPASTIC GAIT OR SPERMATOGENESIS OR SPLEEN OR SPRAY DRIFT OR STOMACH LESIONS OR STUNTED FETUS OR SUBACUTE OR SUB-ACUTE OR SUBCHRONIC OR SUB-CHRONIC OR SUBLETHAL OR SUB-LETHAL
L24	QUE SPE=ON ABB=ON PLU=ON SUBSTANCE-RELATED EFFECT OR SURVIVAL OR SYMPTOMS (1W) TOXICITY OR SYSTEMIC EXPOSURE OR SYSTEMIC INTOLERANCE REACTIONS OR TERATOGEN OR TERATOGENIC OR TERATOGENICITY OR TERATOLOGY OR TESTICULAR DEVELOPMENT
L25	QUE SPE=ON ABB=ON PLU=ON ACTIVE INGREDIENTS (1W) SAFE OR (COMPOUND OR COMPOSITION OR FUNGICIDE OR INSECTICIDE OR PESTICIDE) (1W)SAFE OR THEORETICAL TOXICITY OR TOPICAL OR TOTAL DIET STUDY OR TOX OR TOXIC OR TOXICITY OR TOXICOGENOMIC OR TOXICOKINETICS OR TOXICOL
L26	QUE SPE=ON ABB=ON PLU=ON TOXICOLOGICAL OR TOXICOLOGY OR TRACTOR MOUNTED OR TRANSDERMAL OR TRANSFER COEFFICIENT OR TRANSFERABLE RESIDUES OR TREATMENT RELATED EFFECTS OR TUMORIGEN OR TUNNEL TEST OR TWO-GENERATION OR UNACCEPTABLE EFFECTS OR UTEROTROPHIC ASSAY
L27	QUE SPE=ON ABB=ON PLU=ON VERTEBRATE OR VIABILITY (1W) EMBRYO OR WEANING OR WEIGHT ALTERATION OR WEIGHTS OR WHOLE BODY DOSIMETER OR WHOLE BODY DOSIMETRY OR WORKER

**Table 2.2.2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.	
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)	
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.	
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.	
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.	
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.	

Provider	Database	Justification	Limits applied
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily	
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.	
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)	
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.	
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly	
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.	

Provider	Database	Justification	Limits applied
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (Searches 1-5 only).	
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.	
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.	

\* Total number of summary records retrieved after removing duplicates

**Table 2.2.3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.2.4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.2.5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.3 Metabolism and Residues

**Table 2.3.1: Detailed Search Parameters for Metabolism and Residues data – Search Terms**

Search Strategy		
Chemical Names:		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-		
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)		
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)		
1,2,4-Triazol-1-ylacetic acid		
1,2,4-Triazole-1-acetic acid		
1H-1,2,4-Triazol-1-ylacetic acid		
2-(1,2,4-Triazol-1-yl) acetic acid		
2-(1H-1,2,4-Triazol-1-yl) acetic acid		
1H-1,2,4-Triazole (CA Index Name)		
s-Triazole (8CI)		
3,4-Diazapyrrole		
4H-1,2,4-Triazole		
PLUS		
L1	QUE	(METABOL? OR RESIDUE# OR TRANSFORM? OR BIOTRANSFORM?)
L2	QUE	(DEGRAD? OR BIODEGRAD? OR FATE# OR MRL OR MRLS)
L3	QUE	(CONJUGAT? OR EXCRET? OR ELIMINAT?)
L4	QUE	(FOOD# OR FEED# OR DIET# OR DIETARY OR CONSUMER? OR HUMAN#)
L5	QUE	(CONTAMINAT? OR SAFE? OR EXPOS? OR ANALY? OR ASSES?)
L6	QUE	(INTAKE? OR (IN(W)TAKE?) OR SURVEY? OR RISK?)
L7	QUE	(TOXIC? OR STUDY? OR STUDIES?)
L8	QUE	(L4 (10A) (L5 OR L6 OR L7))
L9	QUE	(LIVESTOCK# OR COW# OR GOAT# OR CATTLE# OR BULLOCK#)
L10	QUE	(BOVINE? OR BOVIDAE? OR BOS OR BULL# OR HEIFER? OR CAPRA#)
L11	QUE	(SHEEP# OR EWE OR EWES OR RAM# OR SWINE# OR PIGLET#)
L12	QUE	(PIG# OR SUIDAE? OR SUS OR OVIS OR OX OR OXEN)
L13	QUE	(RUMINANT? OR HEN# OR CHICKEN# OR FOWL# OR TURKEY?)
L14	QUE	(DUCK# OR GOOSE OR GEESE OR CAPON# OR POULTRY?)
L15	QUE	(MEAT OR MILK OR EGG# OR TISSUE#)
L16	QUE	(( (BROKEN? OR BREAK?) (W) (DOWN OR UP)) OR BREAKDOWN?)
L17	QUE	(BREAKSDOWN? OR UPTAKE? OR PROCESSING? OR BOUND?)
L18	QUE	(( (NON(W)EXTRACTAB?) OR (ROTATIONAL(3A)CROP#))
L19	QUE	(( (L1 OR L2 OR L3) OR L8 OR (L9 OR L10 OR L11 OR L12
OR		L13 OR L14) OR (L15 OR L16 OR L17 OR L18))

**Table 2.3-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied	Number *
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	10 years	856 (600, 172, 84)
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.		
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		

Provider	Database	Justification	Limits applied	Number *
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAPLUS, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly		
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly. (Searches 1-5 only)		
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		
	ANABSTRACT	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		

\* Total number of summary records retrieved after removing duplicates – numbers in parentheses are the summary records retrieved in the initial search and then the 1<sup>st</sup> and 2<sup>nd</sup> top-up respectively)

**Table 2.3-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.3-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.3-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.4 Ecotoxicology

**Table 2.4.1: Detailed Search Parameters for Ecotoxicological studies (CA 8.1 to 8.9)**

Search Strategy	
L1	QUE (288-88-0 OR 1450828-63-3 OR 28711-29-7 OR 333354-47-5)
L2	QUE (86362-20-1 OR 114419-45-3 OR 4819-36-7)
L3	QUE (1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YLACETIC (W) ACID)
L4	QUE (1 (W) 2 (W) 4 (W) TRIAZOLE (W) 1 (W) ACETIC (W) ACID)
L5	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YLACETIC (W) ACID)
L6	QUE (2 (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YL (W) ACETIC (W) ACID)
L7	QUE (2 (2W) 1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YL (W) ACETIC (W) ACID)
L8	QUE ((1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOLE) OR (S (W) TRIAZOLE))
L9	QUE ((3 (W) 4 (W) DIAZAPYRROLE) OR (4H (2W) 1 (W) 2 (W) 4 (W) TRIAZOLE))
L10	QUE (25167-73-1 OR 27236-77-7 OR 116421-29-5 OR 1001118-18-8)
L11	QUE (3 (2W) 1H (W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) YL (W) ALANINE)
L12	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) PROPANOIC (W) ACID)
L13	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) PROPIONIC (W) ACID)
L14	QUE ((2 (W) HYDROXY (W) 3) (2W) (L12 OR L13))
L15	QUE ((ALPHA (W) (HYDROXY OR AMINO)) (3A) (L12 OR L13))
L16	QUE (L1-11 OR L14-15)
<b>PLUS</b>	
L1	QUE (RIPARIAN? OR REPTILE? OR SNAKE? OR LIZARD?)
L2	QUE (TORTOISE? OR TURTLE? OR TERRAPIN? OR CROCODIL?)
L3	QUE (ALLIGATOR? OR CAIMAN? OR GHARIAL? OR HOVERFLIES)
L4	QUE ((MEADOW# (W) VOLE#) OR PSEUDOKIRSCHNERIELLA)
L5	QUE (RHAPHIDOCELIS OR NITZSCHIA OR CYCLOTELLA OR MICROCYSTIS)
L6	QUE (OSCILLATORIA OR APHANIZOMENON OR ANKISTRODESMUS)
L7	QUE (TEILINGRIA OR MONORAPHIDIUM OR RADIOCOCCACAE OR

Search Strategy		
TETRASPORALES)		
L8	QUE	(TETRAEDRON OR TREUBARIA OR WILLEA OR COSMOCLADIUM)
L9	QUE	(HYPOASPIS OR (SOIL(3A)MICROORGAN?) OR ECHINOCHLOA OR SPARTINA)
L10	QUE	(SALVINIA OR NAJAS OR CALLITRICHE OR MYOSOTIS OR STRATIOTES)
L11	QUE	(HIPPIRUS OR PERSICARIA OR CLOEON? OR CORBICULA?)
L12	QUE	(NEOCARIDINIA? OR NEOCARIDINA? OR MYSID? OR CICHLIDAE)
L13	QUE	(CICHLID# OR LEPOMIS? OR SERRANIDAE OR PERCIFORMES)
L14	QUE	(ICTALURUS? OR POECILIA? OR ORYZIAS? OR GASTEROSTEUS?)
L15	QUE	(GASTEROSTEIDAE OR SALVELINUS OR BRACHYDANIO? OR CARASSIUS?)
L16	QUE	(MISGUMUS? OR CYPRINODON? OR FUNDULUS? OR MISGURNUS?)
L17	QUE	(BREAM OR ROTIFER# OR GAMMARUS OR GAMMARID? OR MAYFLY?)
L18	QUE	(BIVALVE# OR MUSSEL# OR MOLLUSK# OR MOLLUSC# OR BUFO)
L19	QUE	(NEWT# OR SCALLOP# OR CLAM# OR GAMBUSIA OR OREOCHROMIS)
L20	QUE	(OSTRAC? OR TUBIFEX? OR TURBELLARIA OR COPEPODA)
L21	QUE	(PREDACE? OR PREDACI? OR PARASITOID? OR APIS OR APIDAE)
L22	QUE	(BOMBUS OR BOMBINAE OR WORM# OR LUMBRICIDAE OR LUMBRICUS)
L23	QUE	(ALLOBOPHORA? OR DENDROBAENA? OR APORRECTODEA? OR DENDRODRILUS?)
L24	QUE	(EISENIA? OR OCTOLASION? OR (LACE(W)WING#) OR NEUROPTER?)
L25	QUE	(CARABID? OR CARBUS OR STAPHYLINID? OR COCCINEL? OR ADALIA?)
L26	QUE	(STETHORUS? OR SCYMNUS? OR WASP# OR VESPIDAE OR SPHECOIDEA)
L27	QUE	(SPHECIDAE OR STIZIDAE OR OPIUS OR (ICHNEUMON(W)FL?))
L28	QUE	(ICHNEUMONID? OR BRACONID? OR CHALCID? OR CYNIP? OR APHIDI?)
L29	QUE	(EUCOILID? OR IBALIID? OR FIGITID? OR EURYTOM? OR TORYM?)
L30	QUE	(ORYM? OR EUCHARIT? OR PERILAMP? OR PTEROMAL? OR CHRYSOLAMP?)
L31	QUE	(EUPELM? OR ENCYRT? OR SIGNIPHOR? OR APHELIN? OR ELASMID?)
L32	QUE	(ELASMUS OR TETRACAMP? OR MYMAR? OR HELOR? OR PROCTOTRUP?)
L33	QUE	(DIAPRI? OR SCELION? OR PLATYGASTR? OR PLATYGASTER?)
L34	QUE	(CERAPHRON? OR MEGASPIL? OR ARANE? OR OPILION? OR PHALANG?)
L35	QUE	(ARACHNID? OR HARVESTM? OR DADDYLONGLEG? OR (DADDY(W)LONG(W)LEG?))
L36	QUE	((DADDY(W)LONGLEG?) OR COLLEMB? OR (SPRING(W)TAIL?) OR CYDNODROMUS?)
L37	QUE	(PARDOSA? OR ORIOUS? OR TYPHLODROM? OR PHYTOSEIULUS? OR SYRPHID?)
L38	QUE	(METASYRPHUS? OR SYRPHUS? OR EUPEODES? OR EPISYRPHUS? OR SYRPHIAN?)
L39	QUE	(EPISTROPHE? OR AMBLYSEIUS? OR POECILUS? OR TRECHUS? OR BEMBIDION?)
L40	QUE	(NEBRIA? OR PTEROSTICHUS? OR CALOSOMA? OR TACHYPORUS? OR NABIDAE?)
L41	QUE	(GEOCORIS? OR HYMENOPT? OR HAEMATOLOECHA? OR CHRYSOPID? OR SYMPHYTA?)
L42	QUE	(OULEMA? OR APHYTIS? OR BATHYPLECTES? OR LINPHIIDAE? OR LYNPHIIDAE?)

<b>Search Strategy</b>		
L43	QUE	(LINYPHIIDAE? OR ERIGONE? OR BATHYPHANTES? OR MEIONETA? OR
		OEDOTHORAX?)
L44	QUE	(LEPTYHPHANTES? OR LYCOSID? OR LYCOSA? OR CHRYSOPA? OR DACNUSA?)
L45	QUE	(CYRTORHINUS? OR CRYPTOLAEMUS? OR ZETZELLIA? OR LEPTOMASTIX?)
L46	QUE	(TRICHOGRAMMA? OR ENCARSIA? OR MACROLOPHUS? OR CHRYSOPERLA?)
L47	QUE	(ALEOCHARA? OR CHRYSOPID# OR CHRYSOPIDAE OR DIABROTICA)
L48	QUE	(PALEXORISTA? OR MAMMAL## OR ANIMAL? OR RABBIT? OR RODENT#)
<b>BIRD PROFILE [L94]</b>		
L49	QUE	(BLACKBIRD# OR (BLACK(W)BIRD#) OR ((TURDUS OR T) (W)MERULA) )
L50	QUE	(CHAFFINCH? OR ((FRINGILLA OR F) (W)COELEBS) OR GREENFINCH?)
L51	QUE	(( (CARDUELIS OR C) (W)CHLORIS) OR SONGTHRUSH?)
L52	QUE	((SONG(W)THRUSH?) OR ((TURDUS OR T) (W)PHILOMELOS) OR WREN#)
L53	QUE	(( (TROGLODYTES OR T) (W)TROGLODYTES) OR (WILLOW (W) WARBLER#) )
L54	QUE	(( (PHYLLOSCOPUS OR P) (W)TROCHILUS) OR (GREAT (W)TIT#) )
L55	QUE	(( (PARUS OR P) (W)MAJOR) OR ROBIN# OR GOLDFINCH?)
L56	QUE	(( (ERITHACUS OR E) (W)RUBECULA) OR DUNNOCK#)
L57	QUE	(( (CARDUELIS OR C) (W)CARDUELIS) OR LINNET#)
L58	QUE	(( (PRUNELLA OR P) (W)MODULARIS) OR SKYLARK# OR (SKY (W) LARK#) )
L59	QUE	(( (HEDGE (W) (SPARROW# OR ACCENTOR#) ) ) )
L60	QUE	(( (CARDUELIS OR C) (W)CANNABINA) OR ((ALAUDA OR A) (W) ARVENSIS) )
L61	QUE	(( (RED (W) LEGGED (W) PARTRIDGE#) OR ((ALECTORIS OR A) (W) RUFA) ) )
L62	QUE	(( (MEADOW (W) PIPIT#) OR MEADOWPIPIT# OR ((ANTHUS OR A) (W) PRATENSIS) ) )
L63	QUE	(LAPWING# OR ((VANELLUS OR V) (W)VANELLUS) OR PEEWIT#)
L64	QUE	(STARLING# OR ((STURNUS OR S) (W)VULGARIS))
L65	QUE	((TURTLE (W)DOVE#) OR ((STREPTOPELIA OR S) (W)TURTUR))
L66	QUE	(YELLOWHAMMER# OR (YELLOW (W)HAMMER#) OR (YELLOW (W) WAGTAIL#) )
L67	QUE	(( (EMBERIZA OR E) (W)CITRINELLA) OR (YELLOW (W) WAG (W) TAIL#) )
L68	QUE	(( (MOTACILLA OR M) (W)FLAVA) OR (FAN (W) TAILED (W) WARBLER#) )
L69	QUE	(( (GREY (W) LAG (W) G!!SE) OR ((ANSER OR A) (W)ANSER) )
L70	QUE	(REEDBUNTING# OR (REED (W)BUNTING#) OR ((EMBERIZA OR E) (W)SCHOENICLUS) )
L71	QUE	(CHAFFINCH? OR BLUETIT? OR (BLUE (W)TIT?))
L72	QUE	(( (PARUS OR P) (W)CAERULEUS) OR (SYLVIA (W)COMMUNIS) )
L73	QUE	(( (GALERIDA OR G) (W)CRISTATA) OR (TREE (W) SPARROW#) )
L74	QUE	(( (COTURNIX OR C) (W)COTURNIX) OR (GREY (W) PARTRIDGE#) )
L75	QUE	(( (PERDIX OR P) (W)PERDIX) OR ((PHASIANUS OR P) (W) COLCHICUS) )
L76	QUE	(( (MILIARIA OR M) (W)CALANDRA?) OR GREYLAGG!!SE)
L77	QUE	(( (GREYLAG (W)G!!SE) OR ((COLUMBA OR C) (W)PALUMBUS?))
L78	QUE	(( (STREPTOPELIA OR S) (W) (ORIENTALIS? OR RISORIA?))
L79	QUE	(( (MOTACILLA OR M) (W)ALBA?) OR (CRESTED (W) LARK#) )

**Search Strategy**

L80 QUE ((WHITE(W)WAGTAIL#) OR (WOOD(W)PIGEON#) OR (BIRD(W)LIFE))  
L81 QUE ((SONG(W)BIRD#) OR VANELLUS? OR (PEE(W)WIT#))  
L82 QUE (AVIFAUNA? OR (AVI(W)FAUNA?) OR SONGBIRD?)  
L83 QUE (ORNITHOLOG? OR PASSERINE? OR WOODPIGEON#)  
L84 QUE (((PASSER OR P)(W)MONTANUS) OR QUAIL# OR (CALANDRA(W)LARK#))  
L85 QUE (CISTICOLA? OR (Z(W)CISTICOLA?) OR BIRDLIFE)  
L86 QUE (GEESE OR GOOSE OR SPARROWS OR PIGEONS OR LARK#)  
L87 QUE (WARBLER# OR PARTRIDGE# OR BUNTING# OR WAGTAIL#)  
L88 QUE (WHITETHROAT# OR PIED# OR (WHITE(W)THROAT#))  
L89 QUE ((FORAGING OR FARMLAND OR GRASSLAND)(3A)BIRD#)  
L90 QUE (BLUEBIRD# OR (ROCK(W)PTARMIGAN#) OR (BLACK(W)REDSTART#))  
L91 QUE ((PREDATOR? OR NONTARGET? OR (NON(W)TARGET)) (3A)BIRD#)  
L92 QUE ((CORN(W)BUNTING#) OR SERINS OR SERINUS)  
L93 QUE (L49-L92)  
L94 QUE L93 NOT (JAPANESE? OR JAPONICA?)

**MAMMALS PROFILE [L105]**

L95 QUE (((SMALL OR WILD)(3A)MAMMAL#) OR (WILD(3A)ANIMAL?))  
L96 QUE (VOLE# OR GLIS OR DORMOUSE OR DORMICE OR ELIOMY#)  
L97 QUE (LEROT# OR LAGOMORPH# OR LEPORID? OR LEPUS OR ORYCTOLAGUS?)  
L98 QUE (HARE# OR SORICIDAE? OR SOREX? OR NEOMY# OR CROCIDURA?)  
L99 QUE (SHREW# OR WOODMOUSE OR WOODMICE OR APODEMUS? OR MICROTUS?)  
L100 QUE (CLETHRIONOMYS? OR CRICETIDAE? OR MICROTIN?)  
L101 QUE (RAPTOR# OR MARMOSET# OR GOPHER# OR GRASSCUTTER#)  
L102 QUE ((PREDATOR? OR NONTARGET? OR (NON(W)TARGET?)) (3A)MAMMAL#)  
L103 QUE ((WOOD(W)(MOUSE OR MICE)) OR ARVICOLA?)  
L104 QUE (MEADOW#(W)VOLE#)  
L105 QUE (L95-L104)

**EXISTING ECOTOX PROFILE [L171]**

L106 QUE (ECOTOX? OR LC50 OR ((LC OR EC OR LR)(W)50) OR EC50 OR LR50)  
L107 QUE (ECO OR ECOL OR ECOLOG? OR ENV OR ENVIRONM? OR AQUATIC?)  
L108 QUE (L107(5A)(TOX? OR RISK? OR IMPACT? OR EFFECT?))  
L109 QUE (AQUATIC? OR FRESHWATER? OR (FRESH(W)WATER?))  
L110 QUE (FLORA OR FAUNA OR BIOTA OR ORGANISM? OR INSECT?)  
L111 QUE (ENVIRONM? OR LIFE OR INVERTEB? OR CRUSTACE? OR SPECIES)  
L112 QUE (ENTOMOFAUNA OR (ENTOMO(W)FAUNA))  
L113 QUE (L109(5A)(L110 OR L111 OR L112))  
L114 QUE (MAGNA? OR (D(W)MAGNA?) OR CHIRONOM? OR BRACHIONUS?)  
L115 QUE (LIMNEA? OR CRASSOSTREA? OR ALGA# OR FISH OR FISHES)  
L116 QUE (ONCORHYNCHUS? OR SALMONIDAE? OR CYPRINUS? OR CYPRINID?)  
L117 QUE (PIMEPHALES? OR PISCES OR TROUT OR SUNFISH? OR CARP)  
L118 QUE (MINNOW? OR (F(W)MINNOW?) OR CATFISH? OR ZEBRAFISH?)  
L119 QUE (GOLDFISH? OR (ZEBRA(W)DANIO#) OR GUPPY OR GUPPIES)  
L120 QUE (KILLFISH? OR FATHEAD? OR BLUEGILL? OR SALMON#)  
L121 QUE (THUNDERFISH? OR (WATER(W)(FLY OR FLEA?)) OR WATERFLEA?)

Search Strategy		
L122 TOAD#)	QUE	(FROG# OR AMPHIBIA? OR SHRIMP# OR PRAWN# OR CRAB# OR
L123	QUE	(TADPOLE# OR CRAYFISH? OR SHELLFISH? OR LOBSTER#)
L124	QUE	(OYSTER# OR SNAIL# OR RANA OR RANIDAE? OR PLANKTON?)
L125	QUE	L106 OR L108
L126	QUE	((NONTARGET? OR (NON(W)TARGET?)) (5A) (PLANT? OR FLORA?))
L127	QUE	((AQUATIC(3A) (PLANT? OR (PHYTO(W)TOX?) OR PHYTOTOX?))
L128	QUE	(SEDIMENT? OR HYDROSOIL? OR DUCKWEED? OR PONDWEED?)
L129	QUE	((DUCK OR POND) (W)WEED#) OR MACROPHYT? OR PERIPHYTON?)
L130 HYDROCHARITA?)	QUE	(POTAMOGETON? OR CHAROPHYTA? OR ELODEA? OR
L131 CHLORELLA?)	QUE	(CERATOPHYL? OR CHLAMYDOMON? OR SELENASTRUM? OR
L132 ANABAENA?)	QUE	(SCENEDESMUS? OR SKELETONEMA? OR NAVICULA? OR
L133	QUE	(MYRIOPHYLLUM? OR GLYCERIA?)
L134	QUE	(NONTARGET? OR (NON(W)TARGET?) OR BENEFICIAL?)
L135 INSECT?)	QUE	(EFFECT? OR INVERTEB? OR ORGANISM? OR ARTHROPOD? OR
L136	QUE	(FAUNA OR SPECIES OR (ENTOMO(W)FAUNA?) OR ENTOMOFAUNA?)
L137	QUE	((L134(5A) (L135 OR L136)))
L138 HONEYBEE#)	QUE	(PREDAT? OR (NATURAL(W)ENEM?) OR BEE OR BEES OR
L139 EARTHWORM?)	QUE	(BUMBLEBEE# OR ((HONEY OR BUMBLE) (W)BEE#) OR
L140 LADYBIRD#)	QUE	((EARTH(W)WORM?) OR LADYBUG# OR LADYBEETLE# OR
L141	QUE	((LADY(W) (BUG# OR BEETLE# OR BIRD#)) OR HOVERFLY)
L142	QUE	(HOOVERFLIES OR SAWFLY OR SAWFLIES OR DRONEFLY)
L143	QUE	(DRONEFLIES OR FLOWERFLY OR FLOWERFLIES OR LACEWING?)
L144	QUE	((HOVER OR DRONE OR FLOWER OR SAW) (W) (FLY OR FLIES)))
L145	QUE	(SPIDER# OR SPRINGTAIL? OR (ROOT(W)WORM#) OR ROOTWORM#)
L146	QUE	(L137-L145)
L147 AVIFAUNA?)	QUE	(BIRD? OR AVES OR AVIAN? OR (AVI(W)FAUNA?) OR
L148	QUE	(SONGBIRD? OR (SONG(W)BIRD?) OR ORNITHOLOG?)
L149	QUE	(L147 OR L148)
L150	QUE	((WILD(3A) (LIFE OR ANIMAL#)) OR WILDLIFE OR SQUIRREL?)
L151	QUE	(VOLE# OR SCIURUS OR GLIRID? OR GLIS OR DORMOUSE)
L152	QUE	(DORMICE OR ELIOMYS OR LEROT# OR MUSTELID? OR MINK#)
L153	QUE	(MUSTELINE# OR WEASEL? OR STOAT? OR MUSTEL? OR BADGER?)
L154	QUE	(MELES OR MELINAE OR OTTER# OR LUTRA OR LUTRINAE)
L155 HARE#)	QUE	(LAGOMORPH# OR LEPORID? OR LEPUS OR ORYCTOLAGUS OR
L156	QUE	(TALPA OR MOLE OR MOLES OR HEDGEHOG? OR (HEDGE(W)HOG?))
L157 APODEMUS)	QUE	(CROCIDURA? OR SHREW# OR WOODMOUSE OR WOODMICE OR
L158	QUE	(MICROTUS OR ARVICOLA OR CLETHRIONOMYS? OR CRICETIDAE?)
L159	QUE	(ERINACEUS OR ERINACEIDAE? OR SORICIDAE? OR SOREX)
L160	QUE	(ENDOCRIN? OR HORMON?)
L161 DISEASE?)	QUE	(DISRUPT? OR MIMIC? OR MODULAT? OR DISORDER? OR
L162	QUE	(L160(5A) L161)
L163	QUE	(DAPHNI? OR CERIODAPHNI? OR HYALELLA? OR ASSELLUS)
L164	QUE	(L113-L124) OR L163
L165 CHARA)	QUE	(PHYTOPLANKTON? OR AUFWUCH# OR LEMNA? OR ARALES OR
L166	QUE	(L126-L129) OR (L130-L133) OR L165
L167	QUE	(NEOMYS OR MICROTINAE?)

Search Strategy				
L168	QUE	(L150-L159)	OR	L167
L169	QUE	(LOACH? OR STICKLEBACK? OR MUMMICHOG# OR TILAPIA? OR ASELLUS)		
L170	QUE	L164	OR	L169
L171	QUE	L125	OR	L170
L172	QUE	(L1-L48)		
L173	QUE	(L171 OR L172 OR L94 OR L105)		TOTAL PROFILE

Table 2.4-2: Details of Databases Searched and Justification for Selection

Provider	Database	Justification	Limits applied	Number*
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None	138
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		82 (1)
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		0
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		2
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		2
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 - present and is updated weekly.		45 (2)

Provider	Database	Justification	Limits applied	Number*
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		15
	HCAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		148 (1)
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		0
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		0
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		0
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly		3 (2)
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		1

Provider	Database	Justification	Limits applied	Number*
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (searches 1-5 only).		1
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		6
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		0

\* Total number of summary records retrieved after removing duplicates, number in parenthesis is number in Search 4

**Table 2.4-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
<b>A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.4-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
<b>A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.5-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
<b>A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.5 Environmental Fate

**Table 2.5-1: Detailed Search Parameters for Fate and behaviour in the environment (CA 7.1.1 to 7.5)**

Search Strategy	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ -)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE (FATE# OR DEGRAD? OR PERSIST? OR DECOMP? OR DECAY?)
L2	QUE (TRANSFORM? OR DETERIORAT? OR METAB? OR DEGENERAT?)
L3	QUE (BIODEGRAD? OR BIOTRANSFORM? OR BIODETERIORAT?)
L4	QUE (BIODEGENERAT? OR BREAKDOWN? OR BREAKSDOWN?)
L5	QUE (((BROKEN? OR BREAK?)(W)(UP OR DOWN)) OR HALFLIFE#)
L6	QUE (HALFLIVES OR HALF(W)(LIFE OR LIVES) OR DEGRDN# OR DECOMP#)
L7	QUE (BIODEGRDN# OR DEGN# OR BIODEGN# OR DISSIP? OR RESIDUE?)
L8	QUE (LEACH? OR TRANSPORT? OR MOBIL? OR MOVEMENT? OR HYDROLY?)
L9	QUE (ADSORP? OR ADSORB? OR SORP? OR SORB? OR DESORP?)
L10	QUE (DESORB? OR RUNOFF OR (RUN#(W)OFF) OR DRAIN? OR PERCOLAT?)
L11	QUE (WASHOFF? OR WASHOUT? OR (WASH?(W)(OUT OR OFF)))
L12	QUE (((OFF(W)TARGET) OR LATERAL OR HORIZONTAL)(3W)MOVE?)
L13	QUE (PHOTOLY? OR PHOTODEGRAD? OR PHOTODECOMP?)
L14	QUE (PHOTOTRANSFORM? OR PHOTOSTAB? OR PHOTODEGRDN# OR PHOTODEGN#)
L15	QUE ((PHOTO(W)DECOMP? OR DEGRAD? OR TRANSFORM? OR STAB? OR CHEM?))
L16	QUE (PHOTOCHEM? OR VOLATIL? OR VAPOUR? OR VAPOR? OR DT50 OR DT90)
L17	QUE ((DT(W)50) OR (DT(W)90) OR KDOC OR (K(W)DOC) OR KD OR KOC)
L18	QUE ((K(W)OC) OR (PARTITION?(3W)COEFF?) OR FREUNDLICH)
L19	QUE (SEDIMENT? OR SOIL OR SOILS OR PODZOL? OR CLAY? OR SAND?)
L20	QUE (SILT? OR CHERNOZEM? OR PODSOL? OR LOAM? OR PEAT?)
L21	QUE ((ORGANIC(2W)MATTER?) OR MONTMORIL? OR LATOSOL? OR HUMIC?)
L22	QUE (HUMUS? OR SUBSOIL? OR AIR OR WATER? OR ATMOSPHER?)
L23	QUE (RAIN### OR RAINWATER? OR RAINFALL? OR LEACH?)
L24	QUE (GROUNDWATER? OR ENVIRONMENT? OR PRECIPITAT? OR POND#)

**Search Strategy**

L25 QUE (STREAM# OR RIVER# OR DELTA# OR ESTUAR? OR SEDIMENT?)  
 L26 QUE (AQUATIC? OR MARINE? OR TIDAL? OR BENTHIC? OR LAKE#)  
 L27 QUE (BENTHOS? OR LIMNO? OR FRESHWATER? OR SEAWATER?)  
 L28 QUE (SALTWATER? OR ((GROUND? OR FRESH OR SEA OR SALT)(W)WATER?))  
 L29 QUE (LACUSTRINE? OR MIRE OR MIRES OR RESERVOIR# OR CANAL#)  
 L30 QUE (LOCH# OR SEA OR OCEAN OR OCEANS OR LAGOON? OR SEAS)  
 L31 QUE (SEABED OR SEAFLOOR OR INTERTIDAL? OR SHORE? OR COAST?)  
 L32 QUE (BRACKISH OR LITTORAL? OR SEASHORE? OR MEIOBENTH?)  
 L33 QUE (MICROBENTH? OR MACROBENTH? OR HARBOUR# OR FLUVIAL?)  
 L34 QUE (MARSH? OR BOG OR BOGS OR SWAMP? OR FEN OR FENS OR ALLUVI?)  
 L35 QUE (MUDFLAT? OR (MUD(W)FLAT?) OR BAY OR BAYS OR CREEK#)  
 L36 QUE (HYDROSOIL# OR (HYDRO(W)SOIL#) OR MESOCOSM? OR MICROCOSM?)  
 L37 QUE (WETLAND? OR FENLAND? OR ((WET OR FEN)(W)LAND?))  
 L38 QUE (WATERWAY? OR WATERSHED? OR (WATER(W)(WAY? OR SHED?)))  
 L39 QUE (CATCHMENT? OR DITCH? OR DRAIN# OR DRAINAG?)  
 L40 QUE (((FOLIAGE OR FOLIAR OR LEAF OR LEAVES)(5A)EVAPORAT? ) )  
 L41 QUE ((SPRAY? OR DUST?)(3A)DRIFT)  
 L42 QUE (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR L8 OR L9 OR L10  
 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR L17 OR L18 OR L19  
 OR L20 OR L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28  
 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37  
 OR L38 OR L39 OR L40 OR L41)

**Table 2.5-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied	Number*
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None	186 (1)
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		55 (0)
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		0 (0)
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		0 (0)
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		1 (0)
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.		19 (0)
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		16 (3)

Provider	Database	Justification	Limits applied	Number*
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		734 (11)
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		0 (0)
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		0 (0)
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		0 (0)
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly		0 (1)
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		2 (2)

Provider	Database	Justification	Limits applied	Number*
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (searches 1-5 only).		9 (0)
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		63 (3)
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		2 (1)

\* Total number of summary records retrieved after removing duplicates in Search 1, number in parenthesis is number in Search 4

**Table 2.5-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
<b>A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.5-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
<b>A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table 2.5-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
<b>A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>	

\* Total number of summary records or full-text documents retrieved after removing duplicates

Document Title

**Literature Search  
Triazole Derivative Metabolites,  
Being Common Metabolites of Triazole-Fungicides**

Data requirement

**EU Regulation 1107/2009 & EU Regulation 283/2013  
Document MCA  
Section 9: Literature data**

According to the Guidance Document SANCO/10181/2013, for  
preparing dossiers for the approval of a chemical active substance

**Version 8**

Date

**10<sup>th</sup> July 2024**

Owner

**Triazole Metabolite Derivatives Group (TMDG)**

**BASF SE, Bayer AG, Corteva Agriscience LLC,  
Gowan Crop Protection Ltd, Syngenta**

Content modified for submission by Syngenta Japan K.K.

19<sup>th</sup> September 2024

## **OWNERSHIP STATEMENT**

**This document, the data contained in it and copyright therein are owned by the Triazole Derivative Metabolite Group (TDMG). No part of the document or any information contained therein may be disclosed to any third party without the prior written authorisation of the TDMG.**

**Version history<sup>1</sup>**

<b>Date</b>	<b>Data points containing amendments or additions and brief description</b>	<b>Document identifier and version number</b>

<sup>1</sup> It is suggested that applicants adopt a similar approach to showing revisions and version history as outlined in SANCO/10180/2013 Chapter 4 How to revise an Assessment Report

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## CA 9 LITERATURE DATA

A literature search was carried out covering the four common triazole metabolites, 1,2-4-triazole, triazole alanine, triazole acetic acid and triazole lactic acid, as required according to Article 8(5) of Regulation (EC) No 1107/2009. The literature search was performed in accordance to the provisions of the EFSA Guidance “Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) 1107/2009”.

The objective of this literature search document was as a supplement to the previous literature search document, Version 7 of 3<sup>rd</sup> July 2020 which covers the period 9<sup>th</sup> June 2004 until 23<sup>rd</sup> March 2020. This previous document has been submitted to a number of EU Member States with various parent triazole dossiers from 2014 onwards.

This current literature search covers the period 23<sup>rd</sup> March 2020 – 2<sup>nd</sup> February 2024 and is the assessment of scientific peer-reviewed open literature dealing with the four common triazole metabolites listed above.

### History

This literature search is performed for and owned by the Triazole Derivatives Metabolite Group (TDMG), a task force consisting of five companies, BASF SE, Bayer AG, Corteva Agriscience LLC, Gowan Crop Protection Ltd and Syngenta. These five companies have interests in a number of parent triazole fungicide compounds. The parent triazoles have common metabolites and historically the companies have formed a cooperation to share data and avoid duplicate testing. The TDMG also license data to license holders particularly to avoid duplicate animal testing.

### CA 9.1 Summary

This report summarises the search for “scientific peer-reviewed open literature on the four common triazole metabolites, 1,2-4-triazole (124T), triazole alanine (TA), triazole acetic acid (TAA) and triazole lactic acid (TLA), dealing with all sections of the dossier and (together with the previously submitted literature search version 6) published within the last sixteen years before the date of submission of the dossier” in accordance with Article 8(5) of Regulation (EC) No. 1107/2009. This version covers strictly from **23<sup>rd</sup> March 2020 until 2<sup>nd</sup> February 2024**.

The exact search strategy is detailed in Appendix 1 and 2 but a summary of the methodology employed is given below.

- A very broad search was conducted in a number of scientific source databases (detailed in Appendix 2) for using the search terms listed in Appendix 1.
- Duplicate titles from within each database were automatically removed from the output.
- A rapid relevance assessment of the titles was conducted to remove any additional duplicates between databases and any obviously irrelevant titles (where enough information was available from the title alone).
- Summary abstracts were requested for the remaining titles and a further rapid relevance assessment was conducted where again any clearly irrelevant titles were removed.

- A detailed assessment of the full-text documents for the remaining publications was conducted using the criteria listed in Appendix 1 developed for study relevance
- Any relevant papers were highlighted and assessed for reliability.

An overview of the results is summarised in the table below.

Summary of the review	Number	
	Search: 23 <sup>rd</sup> March 2020 until 2 <sup>nd</sup> February 2024	
Total number of summary records retrieved after removing duplicates from all database searches	1737	
Total number of summary records per dossier section search filter	Physical chemistry	199
	Toxicology	499
	Metabolism and residues	368
	Ecotoxicology	129
	Environmental fate	542
Number of summary records excluded after rapid assessment* for relevance (by title/abstract)	Physical chemistry	180
	Toxicology	458
	Metabolism and residues	341
	Ecotoxicology	110
	Environmental fate	489
Number of summary records excluded after expert assessment for relevance* (by title/abstract i.e. not relevant)	Physical chemistry	19
	Toxicology	39
	Metabolism and residues	25
	Ecotoxicology	16
	Environmental fate	44
Number of summary records for detailed assessment of full-text documents by expert (i.e. possibly relevant)	Physical chemistry	0
	Toxicology	2
	Metabolism and residues	2
	Ecotoxicology	3
	Environmental fate	9
Number of studies excluded from the risk assessment after detailed assessment of full-text documents (i.e. not relevant)	Physical chemistry	0
	Toxicology	2
	Metabolism and residues	2
	Ecotoxicology	3
	Environmental fate	8
Number of studies not excluded for relevance after detailed assessment (i.e. reliable studies and studies of unclear reliability)	Environmental fate	1

\* aligned with EFSA Journal 2011; 9(2):2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles, and titles plus abstracts.

## CA 9.2 Search strategy

The search strategy is as outlined below with further detail specified, per section, in Appendix 1 and 2.

### CA 9.2.1 Date of the search

The table below gives the relevant dates of the searches conducted from Version 6 of this document, Version 7 and this update Version 8:

<b>Previous literature search documents</b>	<b>Version 6 &amp; Version 7</b>
Date of search 1	10 <sup>th</sup> January 2004 - 10 <sup>th</sup> January 2014
Date of search 2	10 <sup>th</sup> June 2015
Date span of the search 2	10 <sup>th</sup> January 2014 – 9 <sup>th</sup> June 2015
Date of search 3	19 <sup>th</sup> November 2015
Date span of the search 3	10 <sup>th</sup> June 2015 – 18 <sup>th</sup> November 2015
Date of search 4	20 <sup>th</sup> January 2016
Date span of the search 4	19 <sup>th</sup> November 2015 – 20 <sup>th</sup> January 2016
Date of search 5	15 <sup>th</sup> August 2016
Date span of the search 5	20 <sup>th</sup> January 2016 – 15 <sup>th</sup> August 2016
Date of search 6	19 <sup>th</sup> March 2018
Date span of the search 6	15 <sup>th</sup> August 2016 – 19 <sup>th</sup> March 2018
Date of search 7	7 <sup>th</sup> December 2018
Date span of the search 7	20 <sup>th</sup> March – 7 <sup>th</sup> December 2018
Date of search 8	10 <sup>th</sup> April 2019
Date span of the search 8	8 <sup>th</sup> December 2018 – 10 <sup>th</sup> April 2019
Date of search 9	23 <sup>rd</sup> March 2020
Date span of the search 9	10 <sup>th</sup> April 2019 – 23 <sup>rd</sup> March 2020
<b>Current Literature search document</b>	<b>Version 8</b>
Date of search 10	2 <sup>nd</sup> February 2024
Date span of the search 10	23 <sup>rd</sup> March 2020 – 2 <sup>nd</sup> February 2024

The previous literature search documents have been submitted to support the review of TDMG parent triazole active substances in various EU Member States as detailed below.

<b>Date</b>	<b>Parent Triazole Submission</b>	<b>RMS</b>
July 2014	Propiconazole	Finland
Oct 2015	Metconazole	Belgium / UK
Oct 2015	Triticonazole	Austria / UK

Jan 2016	Prothioconazole	UK / France
Mar 2016	Mefentrifluconazole	UK / France
June 2016	Difenconazole	Spain / UK
February 2017	Tebuconazole	UK / Denmark
June 2019	Tetraconazole Penconazole	France /Germany Norway / Germany
August 2020	Paclobutrazol	Austria / Romania

### CA 9.2.2 Time window of the literature search

In line with Article 8(5) of Regulation (EC) No 1107/2009 scientific peer-reviewed open literature from 2004 onwards covering more than just the last 10 years prior to the various parent triazole active substance dossier submission dates has been assessed. The initial searches until April 2019 have been summarised in the literature search document Version 6. There is a Version 7 covering the top up search to March 2020 and now this Version 8 covering the top up search up to February 2024.

Literature search document	Version 8
Date of search 10	2 <sup>nd</sup> February 2024
Date span of the search 10	23 <sup>rd</sup> March 2020 – 2 <sup>nd</sup> February 2024

### CA 9.2.3 Bibliographic Databases used in the literature review

The bibliographic databases selected cover a wide range of scientific fields and include journals and chapters in books or symposia, conference proceedings, dissertations and reports. All databases were searched using the search strategy given in CA 9.2 combined with the end point specific search terms given in CA 9.2.5 as a single concept approach.

Databases	Frequency of updates	Date of last update
<b>MEDLINE</b>	1948 to present; 5 times each week with an annual reload	2024-02-01
<b>EMBASE</b>	1974 to present; Updated daily	2024-02-01
<b>ESBIOBASE</b>	1994 to 2022; static file since 2022-01-05	2022-01-05
<b>AGRICOLA</b>	1970 to present; Updated monthly	2023-12-08
<b>BIOSIS</b>	1926 to present; Updated weekly	2024-01-31
<b>CABA</b>	1973 to present; Updated weekly	2024-01-29
<b>HCAPLUS/</b>	1907 to present; Updated daily	2024-02-01
<b>FSTA</b>	1969 to present; Updated weekly	2024-02-02
<b>GEOREF</b>	1669 to present; Updated twice a month	2024-02-02
<b>TOXCENTER</b>	1907 to present; Updated weekly	2024-01-29
<b>PQSCITECH</b>	1962 to present; Updated monthly	2024-01-30
<b>SCISEARCH</b>	1974 to present; Updates weekly	2024-01-29
<b>ANABSTR</b>	1980 to 2021; static file since 2021-12-14	2021-12-14

## CA 9.2.4 Input parameters for literature search

Detailed search parameters - Chemical Names and CAS numbers. The following were searched for;

1,2,4-Triazole (CAS: 288-88-0)

Chemical Names:

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -hydroxy-, (CA Index Name)

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, (CA Index Name)

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, ( $\pm$ )-

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)

1H-1,2,4-Triazole-1-propanoic acid,  $\alpha$ -amino-, (S)-

1H-1,2,4-Triazole-1-propionic acid,  $\alpha$ -amino-, L- (8CI)

1H-1,2,4-Triazole-1-acetic acid (CA Index Name)

1,2,4-Triazol-1-ylacetic acid

1,2,4-Triazole-1-acetic acid

1H-1,2,4-Triazol-1-ylacetic acid

2-(1,2,4-Triazol-1-yl) acetic acid

2-(1H-1,2,4-Triazol-1-yl) acetic acid

1H-1,2,4-Triazole (CA Index Name)

s-Triazole (8CI)

3,4-Diazapyrrole

4H-1,2,4-Triazole

Using these following parameters dealing with the structure specific search terms;

- L1 QUE SPE=ON ABB=ON PLU=ON (288-88-0 OR 1450828-63-3 OR 28711-29-7 OR 333354-47-5 OR 86362-20-1 OR 114419-45-3 OR 4819-36-7 OR 25167-73-1 OR 27236-77-7 OR 116421-29-5 OR 1001118-18-8)
- L2 QUE SPE=ON ABB=ON PLU=ON (1,2,4-TRIAZOL-1-YLACETIC ACID OR 1(W)2(W)4(W)TRIAZOLE(W)1(W)ACETIC(W)ACID) OR (1H(2W)1(W)2(W)4(W)TRIAZOL(W)1(W)YLACETIC(W)ACID) OR (2(2W)1(W)2(W)4(W)TRIAZOL(W)1(W)YL(W)ACETIC(W)ACID) OR (2(2W)1H(2W)1(W)2(W)4(W)TRIAZOL(W)1(W)YL(W)ACETIC(W)ACID))
- L3 QUE SPE=ON ABB=ON PLU=ON ((1H(2W)1(W)2(W)4(W)TRIAZOLE) OR (S(W)TRIAZOLE)) OR ((3(W)4(W)DIAZAPYRROLE) OR (4H(2W)1(W)2(W)4(W)TRIAZOLE)) OR (3(2W)1H(W)1(W)2(W)4(W)TRIAZOL#(W)1(W)YL(W)ALANINE))
- L4 QUE E=ON ABB=ON PLU=ON (1H(2W)1(W)2(W)4(W)TRIAZOL#(W)1(W)PROPANOIC(W)ACID) OR (1H(2W)1(W)2(W)4(W)TRIAZOL#(W)1(W)PROPIONIC(W)ACID))
- L5 QUE SPE=ON ABB=ON PLU=ON ((2(W)HYDROXY(W)3)(2W)(L4))
- L6 QUE SPE=ON ABB=ON PLU=ON ((ALPHA(W)(HYDROXY OR AMINO))(3A)(L4))
- L7 QUE SPE=ON ABB=ON PLU=ON (HYDROXY(4W)TRIAZOLE(1W)PROPANOIC ACID OR AMINO(4W)TRIAZOLE(1W)PROPANOIC ACID OR TRIAZOLE(1W)ACETIC ACID OR TRIAZOL(1W)YLACETIC ACID OR TRIAZOL(1W)YL ACETIC ACID OR AMINO(4W)TRIAZOLE(1W)PROPIONIC ACID OR DIAZAPYRROLE OR NSC(W)83128 OR NSC83128)

### **CA 9.2.5 Endpoint specific search terms**

The endpoint specific search terms were specified for each dossier section and are clearly stated in Appendix 2.

### **CA 9.2.6 Filters**

The four common triazole metabolites 1,2,4 triazole (124T), triazole alanine (TA), triazole acetic acid (TAA) and triazole lactic acid (TLA) were searched for as described above and in Appendix 1 and 2 across multiple data bases. The results, returned from the “single concept search” for each database, were then checked for duplicates which were removed. The searches were then filtered using the search terms specific to a technical aspect, namely physical chemical properties, toxicology, metabolism and residues, ecotoxicology and environmental fate (refer to Appendix 1 and 2).

## CA 9.3 Search results

The results for the top up search of the four triazole metabolites are detailed in Table 9.3-1. The results split across the databases are detailed in Table 9.3-2.

**Table 9.3-1**

Data requirement(s) captured in the search	Physical Chemistry	Toxicology	Metabolism and Residues	Ecotoxicology	Environmental Fate
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	199	499	368	129	542
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	199	497	366	126	533
Total number of <i>full-text</i> documents assessed in detail*	0	2	2	3	9
Number of <i>studies</i> excluded from further consideration after detailed assessment for relevance	0	2	2	3	8
Number of <i>studies</i> not excluded for relevance after detailed assessment (i.e. relevant studies and studies of unclear relevance)	0	0	0	0	1

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

**Table 9.3-2**

Dossier Section	Database	Number of unique answers retrieved (after removal of duplicates and manual removal of false positives due to the query being too unspecific).
Physical Chemistry	Medline	16
	SciSearch	2
	Toxcenter	19
	CAplus	162
Toxicology	Medline	117
	SciSearch	1
	Toxcenter	218
	CAplus	155
	BIOSIS	2
	FSTA	2
	Agricola	1
	EMBASE	1
	Esbiobase	1
	GeoRef	1

Metabolism and Residues	Medline	93
	SciSearch	1
	Toxcenter	93
	EMBASE	2
	BIOSIS	1
	Esbiobase	1
	FSTA	2
	GeoRef	1
	CAplus	174
Ecotoxicology	Medline	46
	SciSearch	1
	Toxcenter	35
	EMBASE	1
	BIOSIS	2
	CABA	1
	GeoRef	1
	CAplus	42
Environmental Fate	Medline	90
	SciSearch	3
	Toxcenter	135
	EMBASE	2
	BIOSIS	2
	Esbiobase	1
	FSTA	2
	GeoRef	1
	CAplus	304
	PQSciTech	1
	Agricola	1

## CA 9.4 Evaluation

The evaluation of the search results is performed according to the EFSA guidance document (EFSA Journal 2011;9(2):2092).

Studies **relevant** to the dossier are those that inform one or more data requirement(s), including hazard identification, hazard characterisation and exposure assessment, for the active substance under assessment, its relevant metabolites, or plant protection products.

This section considers the physical chemical properties, toxicology, metabolism and residue, ecotoxicology and environmental fate data requirements for chemical active substance and plant protection products and other data requirements for which information may have a direct or indirect effect on overall risk assessment (only data requirements under these points having a direct impact on the risk assessment need to be considered).

If a detailed assessment of the study/article was required to determine relevance, the full paper has been provided in KCA Section 9 (and is listed in LCA Section 9).

In case of relevant studies/articles, the full paper is provided and a detailed summary is included in the respective MCA Section.

The scientific peer-reviewed open literature provided with this dossier is protected by Copyright. The TDMG member lead applicant, has secured the right to use, reproduce and share copies of these publications with the required Regulatory Authorities for the purpose of Regulatory decision making. Further use, reproduction or sharing of these copies by a Rapporteur Member State or EFSA for any purpose other than this is prohibited. Should a Regulatory Authority require a copy of the literature provided, a request should be submitted to the applicant.

### CA 9.4.1 Rapid assessment

For the initial rapid assessment, titles were first scanned to identify whether the studies were obviously not relevant. If enough information was available from the title alone to determine that studies were clearly irrelevant, the titles were disregarded. Summary abstracts were then requested for the remaining titles and a further rapid assessment was conducted, where again any irrelevant studies were removed. Any studies clearly not in the remit of this submission or unambiguously belonging to other sections were excluded.

For the rapid assessment of titles and abstracts the criteria listed in Appendix 1 were applied to assess the publication as being clearly irrelevant – if it was not clear from the title or abstract whether the paper was relevant then the full paper was read and detailed in Table 9.4.2-1.

So from a total of 1737 summary records retrieved, all were excluded except just sixteen deemed in need of full assessment.

**Table 9.4.2-1**

Data requirement(s) captured in the search	Physical Chemistry	Toxicology	Metabolism and Residues	Ecotoxicology	Environmental Fate
Total number of <i>summary records</i> retrieved after <i>all*</i> searches of peer-reviewed literature (excluding duplicates)	199	499	368	129	542
Number of <i>summary records</i> excluded from the search results after rapid assessment for relevance**	199	497	366	126	533
Total number of <i>full-text</i> documents assessed in detail*	0	2	2	3	9

\*both from bibliographic databases and other sources of peer-reviewed literature

\*\* aligned with EFSA Journal 2011; 9(2) 2092: rapid assessment means exclusion of “obviously irrelevant records” based on titles.

### CA 9.4.2 Detailed assessment

With 1720 articles in total excluded at the rapid assessment, 16 articles in total remained which underwent detailed assessment based on the full-text document. These 16 articles were evaluated for relevance using the relevance criteria mentioned in Table Appendix 1: List of Criteria for relevance. No documents were considered for Physical Chemistry, 2 documents were considered for Toxicology, 2 documents for Metabolism & Residues, 3 for Ecotoxicology and 9 for Environmental Fate.

**Table 9.4.2-1: Publications excluded from the risk assessment after detailed assessment of full-text documents**

Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)*
<b>Top-up search conducted in 23<sup>rd</sup> March 2020 to 2<sup>nd</sup> February 2024</b>				
Sun, Long; Wang, Kangqian; Li, Wenzhe; Pang, Xiaohui; Zhao, Pengfei; Hua, Rimao; Yang, Xiaofan; Zhu, Meiqing	2023	Enantioselective effects of chiral prothioconazole and its metabolites: Oxidative stress in HepG2 cells and lysozyme activity	Pesticide Biochemistry and Physiology, ( 2023 ) Vol. 197, pp. 105696. CODEN: PCBPBS. ISSN: 0048-3575.	The abstract suggested potential new toxicity data to be available for certain metabolites of prothioconazole without providing details. The check of the complete publication revealed that no data on triazole derivate metabolites (TDMs) 1,2,4-triazole (1,2,4-T), triazole acetic acid (TAA) was contained in the publication. The publication does not provide any new toxicologically new information on TDMs and is therefore not relevant for inclusion in the dossier. DAを行ったが、RA①当該農薬と関係しない論文
Huang Tao; Jiang Haibo; Zhao Yuanhui; He Jia; Cheng Hongguang; Martyniuk Christopher J	2022	A comprehensive review of 1,2,4-triazole fungicide toxicity in zebrafish (Danio rerio): A mitochondrial and metabolic perspective.	The Science of the total environment, (2022 Feb 25) Vol. 809, pp. 151177. Electronic Publication Date: 23 Oct 2021	It was not clear from the abstract if the publication contains toxicological information on triazole derivate metabolites (TDMs) 1,2,4-triazole (1,2,4-T), triazole acetic acid (TAA). The check of the complete publication revealed that no toxicity data on TDMs is contained in the publication. The publication is therefore not relevant for inclusion in the dossier. DAを行ったが、RA①当該農薬と関係しない論文

Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)*
Hergueta-Castillo, M.E. et al.	2023	Understanding the metabolism and dissipation kinetics of Flutriafol in vegetables under laboratory and greenhouse scenarios	Foods 2023, 12, 201	The paper discusses the use of UHPLC-Q-Orbitrap to assess flutriafol dissipation and some metabolite identification in courgette and tomato. The conclusions do not bring any new information to the already existing evaluations of TDMs, and is therefore considered not relevant for inclusion in the dossier. DAを行ったが、RA⑤分析法に関する論文（分析対象としてトリアゾール共通代謝物を含むが、フルトリアホルルを処理した試験でありヘキサコナゾールは用いていない。）
Hergueta-Castillo, M.E. et al.	2023	Dissipation of penconazole formulation in horticultural crops by ultrahigh performance liquid chromatography-high resolution mass spectrometry: from the active substance to metabolites	Food Chemistry 422 (2023) 136266	The paper discusses the use of UHPLC-Q-Orbitrap to assess penconazole dissipation and metabolite identification in courgette and tomato. The conclusions do not bring any new information to the already existing evaluations of TDMs, and is therefore considered not relevant for inclusion in the dossier. DAを行ったが、RA⑤分析法に関する論文（分析対象としてトリアゾール共通代謝物を含むが、ペンコナゾールを処理した試験でありヘキサコナゾールは用いていない。）
Nath Aniket; De Priyanka; Roy Kunal	2021	In silico modelling of acute toxicity of 1, 2, 4-triazole antifungal agents towards zebrafish (Danio rerio) embryos: Application of the Small Dataset Modeller tool.	Toxicology in vitro : an international journal published in association with BIBRA, (2021 Sep) Vol. 75, pp. 105205. Electronic Publication Date: 26 Jun 2021	The paper describes the models available using in silico techniques through Small Dataset Modeller tool, for potential assessment capabilities for evaluating toxicity to zebrafish from exposure to antifungal agents. Modelling potential on aquatic systems and no data generated which is deemed to impact on classifications or risk assessments of any current registered active ingredient toxicity profiles. DAを行ったが、RA⑮ドライラボのみの論文
Pandey, Sapna Kumari; Ojha, Probir Kumar; Roy, Kunal	2020	Exploring QSAR models for assessment of acute fish toxicity of environmental transformation products of pesticides (ETPPs)	Chemosphere, ( 2020 ) Vol. 252, pp. 126508. CODEN: CMSHAF. ISSN: 0045-6535.	The paper describes the calculation models available using QSAR, for potential assessment capabilities for evaluating toxicity to fish from exposure to environmental transformation products of pesticides (ETPPs) modelling on aquatic systems and no data generated which is deemed to impact on classifications or risk assessments of any current registered active ingredient toxicity profiles. DAを行ったが、RA⑮ドライラボのみの論文
Hernandez-Moreno, D.; Blazquez, M.; Navas, Jm; Fernandez-Cruz, MI	2022	Fish cell lines as screening tools to predict acute toxicity to fish of biocidal active substances and their relevant environmental metabolites	Aquatic Toxicology, ( 2022 ) Vol. 242, pp. 106020. CODEN: AQTOGD. ISSN: 0166-445X.	The paper reviewed possible techniques to predict expected endpoints if active substances and metabolites in fish. No actual generated endpoints and thus it is not deemed to impact the classifications or risk assessments of any current registered active ingredient toxicity profiles. DAを行ったが、RA①新しい評価方法の開発に関する論文であり、当該農薬の評価に関係しない。

Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)*
Ni, Zhigang; Chen, Zhi; Zhang, Xuwei; Yang, Xuerui; Zhou, Lei	2023	Photolysis of fungicide triadimefon: A combined experimental and theoretical investigation on homolytic C-O and C-N bonds dissociation mechanisms	Journal of Photochemistry and Photobiology, A: Chemistry (2023), 436, 114402	Interesting paper on the photodegradation mechanism of the triazole triadimefon, based on a combined experimental and theoretical strategy. Irrelevant to the fate and behaviour of the four common triazole metabolites themselves. DAを行ったが、RA①当該農薬と関係しない論文
Martinez-Escudero, C. M.; Garrido, I.; Ros, C.; Flores, P.; Hellin, P.; Contreras, F.; Fenoll, J.	2023	Remediation of pesticides in commercial farm soils by solarization and ozonation techniques	Journal of Environmental Management (2023), 329, 117062	The paper demonstrates the efficiency of solarization-ozonation treatment techniques for the removal of twelve pesticides at full scale. No relevant information on the behaviour of the four common triazole metabolites in the environment. DAを行ったが、RA⑬土壌からの農薬の除去法の開発に関する論文であり検索対象である4分野に関係しない。
Martinez-Escudero, C. M.; Garrido, I.; Flores, P.; Hellin, P.; Contreras-Lopez, F.; Fenoll, J.	2022	Remediation of triazole, anilinopyrimidine, strobilurin and neonicotinoid pesticides in polluted soil using ozonation and solarization	Journal of Environmental Management, (2022) Vol. 310, pp. 114781.	The paper aims to investigate the effectiveness of ozonation and solarization techniques for the removal of different types of pesticides from soil during the summer season. No relevant information on the behaviour of the four common triazole metabolites in the environment. DAを行ったが、RA⑬土壌からの農薬の除去法の開発に関する論文であり検索対象である4分野に関係しない。
Neuwald, Isabelle J.; Huebner, Daniel; Wiegand, Hanna L.; Valkov, Vassil; Borchers, Ulrich; Noedler, Karsten; Scheurer, Marco; Hale, Sarah E.; Arp, Hans Peter H.; Zahn, Daniel	2022	Occurrence, distribution, and environmental behavior of persistent, mobile, and toxic (PMT) and very persistent and very mobile (vPvM) substances in the sources of German drinking water	Environmental Science and Technology, (2022) Vol. 56, No. 15, pp. 10857-10867.	The paper looks at 34 PMT/vPvM substances in 46 surface water, groundwater, bank filtrate, and raw water samples throughout Germany. Not relevant for fate of triazole metabolites considered in this search. In fact, 1,2,4-T is the only metabolite of interest monitored in this paper and it was found in a low number of samples, reducing the robustness of any conclusion. In addition, exact locations of the samplings were not specified due to confidentiality, therefore no adequate site characterization data is available (soils, geology, hydrology). DAを行ったが、DA②日本の代表的な使用方法/使用条件における評価に活用できない文献
Skaarup, Carina; Wodschow, Kirstine; Voutchkova, Denitza D.; Schullehner, Jorg; Raaschou-Nielsen, Ole; Andersen, Helle Raun; Hansen, Birgitte; Ersboell, Annette Kjaer	2022	Geographical Distribution and Pattern of Pesticides in Danish Drinking Water 2002-2018: Reducing Data Complexity	International Journal of Environmental Research and Public Health (2022), 19(2), 823	Extensive screen of Danish Drinking Water for multiple pesticides. Very generic. No relevant information on 1,2,4-T behaviour in the environment. Exact locations of the samplings are not clear in the paper, therefore no adequate site characterization data is available (soils, geology, hydrology). There are in addition limitations linked to the frequency and stability of the samplings. DAを行ったが、DA②日本の代表的な使用方法/使用条件における評価に活用できない文献

Author(s)	Year	Title	Source	Reason for not including publication in dossier (based on relevance and reliability criteria)*
Albers, Christian Nyrop; Johnsen, Anders Risbjerg; Bollmann, Ulla Elisabeth	2023	Urban areas as sources of the groundwater contaminants N,N-dimethylsulfamide (N,N-DMS) and 1,2,4-triazole	Science of the Total Environment, (2023) Vol. 881, pp. 163377.	The study presents analysis of urban groundwater and investigates if detection of 1,2,4-T can originate from urban usage and not agricultural applications. The monitored soils and groundwaters are not agricultural. No conclusions on the fate of behaviour of 1,2,4-T originating from agricultural activities can therefore be made. DA②日本の代表的な使用方法／使用条件における評価に活用できない文献
Ismanto, Aris; Hadibarata, Tony; Kristanti, Risky Ayu; Maslukah, Lilik; Safinatunnajah, Novia; Sathishkumar, Palanivel	2022	The abundance of endocrine-disrupting chemicals (EDCs) in downstream of the Bengawan Solo and Brantas rivers located in Indonesia	Chemosphere, (2022) Vol. 297, pp. 134151. CODEN: CMSHAF. ISSN: 0045-6535.	This study is a monitoring study assessing surface quality in downstream of the Bengawan Solo and Brantas rivers located in Indonesia. It is interesting to be reported as monitoring data. However, since - no details on typical pesticide application practices in the area are reported, no details on actual pesticide use in relation to the sampling locations are given. - the study lacks details such as information on geoclimatic conditions, hydrology and soil properties - There is evidence of 124T contamination originating from sources other than agricultural practices. In fact, the article reports that the rivers are used as garbage dumps by people living on the riverbanks. Therefore, the study cannot be considered relevant. DA①試験方法に関する情報が不足している②日本の代表的な使用方法／使用条件における評価に活用できない文献
Albers Christian Nyrop; Bollmann Ulla Elisabeth; Badawi Nora; Johnsen Anders Risbjerg	2022	Leaching of 1,2,4-triazole from commercial barley seeds coated with tebuconazole and prothioconazole	Chemosphere, (2022 Jan) Vol. 286, No. Pt 2, pp. 131819. Electronic Publication Date: 6 Aug 2021	This study uses commercial barley seeds coated with the triazole fungicides tebuconazole and Prothioconazole, to study the fate of the fungicides and their degradation products, especially 1,2,4-triazole. This is an interesting scientific paper, however, it doesn't change the endpoints or risk assessment for 1,2,4-triazole. The research used non-guideline tests using soil columns that only had a 10 cm depth. Additionally, contamination was observed in the control samples, raising questions on the reliability of results and conclusions. Therefore, the study cannot be considered relevant. DA②日本の代表的な使用方法／使用条件における評価に活用できない文献

\*「公表文献の収集、選択等のためのガイドライン（令和3年9月22日農業資材審議会農薬分科会決定、令和5年7月27日一部改正）」に基づき、日本における第2段階評価結果を申請者が追記した。なお、RAは第一段階適合性評価、DAは第2段階適合性評価、○囲み数字は前述のガイドラインに記載されている判断基準の項目番号を示す。

**Table 9.4.2-2: Relevant studies included in the dossier after detailed assessment of full-text documents for relevance: sorted by data requirement(s)**

<b>Data requirement (indicated by the corresponding CA and CP data point number)</b>	<b>Author(s)</b>	<b>Year</b>	<b>Title</b>	<b>Source</b>
Monitoring CA 7.5	Moeller, Ingelise; Karan, Sachin; Gravesen, Peter; Rosenbom, Annette Elisabeth	2023	On the representability of soil water samples in space and time: Impact of heterogeneous solute transport pathways underneath a sandy field	Science of the Total Environment (2023), 856(Part_1), 159039

**Table 9.4.2-3: Relevant studies included in the dossier after detailed assessment of full-text documents for relevance: sorted by author(s)**

<b>Author(s)</b>	<b>Data requirement (indicated by the corresponding CA and CP data point number)</b>	<b>Year</b>	<b>Title</b>	<b>Source</b>
Moeller, Ingelise; Karan, Sachin; Gravesen, Peter; Rosenbom, Annette Elisabeth	Monitoring CA 7.5	2023	On the representability of soil water samples in space and time: Impact of heterogeneous solute transport pathways underneath a sandy field	Science of the Total Environment (2023), 856(Part_1), 159039

### CA 9.4.3 Overall Conclusion of Results

Sixteen documents, listed above, were assessed in detail for relevance by subject matter experts. Of those sixteen, all were deemed non-relevant except one.

One relevant Environmental Fate document was found from the search performed and summarised in this document. The summary as to relevance is presented below:

**Table 9.4.3-1: Relevant studies included in the dossier after detailed assessment of full-text documents for relevance: sorted by author(s) and reason for relevance;**

Author(s)	Year	Title	Source	Reason for relevance*
Moeller, Ingelise; Karan, Sachin; Gravesen, Peter; Rosenbom, Annette Elisabeth	2023	On the representability of soil water samples in space and time: Impact of heterogeneous solute transport pathways underneath a sandy field	Science of the Total Environment (2023), 856(Part_1), 159039	This paper studied the occurrence of pesticides and their degradation products, based on a detailed three-dimensional sedimentary facies model interpreted from geological and geophysical data combined with groundwater level measurements. It is considered relevant since: <ul style="list-style-type: none"> <li>- 25 sampling sites were monitored for 19 years.</li> <li>- Sufficient information on geoclimatic conditions, hydrology and soil properties</li> <li>- The studied field represents typical pesticide application practices</li> </ul> Can be included in the dossier MCA Section 7 against the data point CA 7.5 Monitoring Data. 適合性分類：C（日本における評価では、DA②の日本の代表的な使用方法／使用条件における評価に活用できないため、適合性なしと判断できる。）

\*「公表文献の収集、選択等のためのガイドライン（令和3年9月22日農業資材審議会農薬分科会決定、令和5年7月27日一部改正）」に基づき、日本における適合性分類を申請者が追記した。

## Appendix 1 Criteria for relevance

### Appendix 1-1: List of Criteria for relevance for Product Chemistry studies

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
Physical and chemical properties (CA 2.1 to 2.15)	<ol style="list-style-type: none"> <li>Well defined test material (including purity/content)</li> <li>Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust (e.g. pre-treatment details, characterisation of physico-chemical parameters, replication, statistical methods, and appropriate sampling regime).</li> <li>Study conditions should not differ significantly from recommended protocols* and internationally agreed tests methods (CIPAC MT and OECD methods).</li> <li>Study conditions should not interfere with the interpretation of the study results.</li> <li>End-points or positions stated as a result of the study significantly affect the proposed risk assessment in the dossier.</li> </ol>

### Table Appendix 1-2: List of Criteria for relevance for toxicological and toxicokinetic studies

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
*CA 5.1 ADME studies	<ol style="list-style-type: none"> <li>Well identified test material including purity and impurity profile</li> <li>Relevant test species e.g. rodent – rat/mouse – non-rodent – dog</li> <li>Relevant endpoint e.g. ADME measurement or metabolite identification</li> <li>Well described condition of the test and quantitative assessment of results to substantiate and evaluate whether the study conclusions and endpoints are robust</li> </ol>
*CA 5.2 Acute toxicity	<ol style="list-style-type: none"> <li>Well identified test material including purity and impurity profile</li> <li>Test species likely to be relevant to mammalian toxicology assessment – rats and mice, rabbit, guinea pig</li> <li>Relevant route of administration for risk assessment</li> <li>Describe observations, examinations, analyses performed or necropsy</li> <li>Different outcome to those studies currently reported</li> </ol>
*CA 5.4 Genotoxicity	<ol style="list-style-type: none"> <li>Well identified test material including purity and impurity profile</li> <li>Relevant cell line or species used</li> <li>“validated” or widely used test method</li> <li>In vitro observation not addressed by in vivo data (including tissue specific effects)</li> <li>In vivo effect in somatic or germs cells in relevant species</li> <li>Relevant route of exposure to test substance</li> <li>Contradicts submitted studies, impacts WoE.</li> <li>Recognised methods for scoring studies outcomes used where applicable</li> </ol>
*CA 5.3, 5.5, 5.6, 5.7, 5.8.1 Short term, chronic, reproductive and neurotoxicity, studies on metabolites	<ol style="list-style-type: none"> <li>Well identified test material including purity and impurity profile</li> <li>Test species likely to be relevant to mammalian toxicology assessment – rodents rats and mice, non-rodent dog is preferred</li> <li>Sufficient number of animals per group to establish statistical significance</li> <li>Test several dose levels (minimum 3)</li> <li>Relevant route of administration for risk assessment</li> <li>Include negative control (preferable)</li> <li>Establish dose response</li> <li>Describe observations, examinations, analyses performed or necropsy</li> <li>Contradicts submitted studies and/or changes key endpoints</li> </ol>

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
CA 5.8.2 Supplementary studies on the active substance	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. Unusual routes of exposure acceptable as they may introduce important information on other possible toxicological effects</li> <li>3. Regulatory use usually limited to addressing species sensitivity /safety factors etc.</li> <li>4. Examples of studies               <ol style="list-style-type: none"> <li>a. Effects of combined exposures</li> <li>b. Hormonal effects (if not guideline studies or included in 5.8.3)</li> <li>c. Hypersensitivity of specific sub-populations</li> <li>d. Gender and age variation in susceptibility (if not included in 5.6 Reproductive studies)</li> <li>e. Mode of action investigations</li> </ol> </li> </ol>
CA 5.8.3 Endocrine disrupting properties	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. All studies considered relevant at this stage – need to be checked for reliability</li> </ol>
CA 5.9 Medical data (including epidemiology) CP 7.2 to 7.4	<ol style="list-style-type: none"> <li>1. Identified test material</li> <li>2. All records considered relevant at this stage - need to be checked for reliability</li> </ol>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

**Table Appendix 1-3: List of Criteria for relevance for Metabolism and Residues**

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
<b>Metabolism and residues data (CA 6.1 to 6.9)</b>	
<b>Summary</b>	<p>The relevance criteria applied to determine whether a literature reference was relevant for the residues and metabolism sections of the active substance renewal process are given below.</p> <ol style="list-style-type: none"> <li>1. Well defined test material. e.g. are purity and batch data provided?</li> <li>2. Applicable test species. e.g. is the crop a representative use; were relevant animal commodities used?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. did the study meet the relevant guidelines?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants e.g. was the compound used previously at the trial site; was the animal feed free from the compound?</li> <li>5. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. were storage intervals recorded; are weather conditions and plot histories available?</li> <li>6. Validated Analytical methodology employed. e.g. were control samples used, acceptable recoveries obtained, clear example chromatograms given?</li> <li>7. Study conditions do not interfere with the interpretation of the study results. e.g. starting processing material residue is robust and there is measurable residue in processed products?</li> </ol>
<b>CA 6.1 Storage Stability of Residues (plant and animal)</b>	<p><u>Storage Stability Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material. e.g. are purity and batch data provided?</li> <li>2. Applicable test species.</li> </ol>

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<p>e.g. is the crop a representative use; were relevant animal commodities used?</p> <ol style="list-style-type: none"> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols, and must be relevant to those in the submission. e.g. did the study meet the relevant guidelines and GAP?</li> <li>4. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. were storage intervals recorded; are weather conditions and plot histories available?</li> <li>5. Validated analytical methodology employed e.g. were control samples used, acceptable recoveries obtained, clear example chromatograms given?</li> <li>6. Study conditions do not interfere with the interpretation of the study results. e.g. starting processing material residue is robust and there is measurable residue in processed products?</li> </ol>
<p><b>CA 6.2 Metabolism, distribution and Expression of Residues (plant and animal)</b></p> <p><b>CA 6.6.2 Metabolism and Distribution in Succeeding Crops</b></p>	<ol style="list-style-type: none"> <li>1. Well defined test material. e.g. if radiolabelled material was used, was an appropriate isotope used?</li> <li>2. Applicable test species. e.g. ruminant, poultry, etc.?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols, and must be relevant to those in the submission. e.g. is the application rate relevant and equivalent to maximum seasonal rate on rotated crops?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants e.g. is plot history supplied?</li> <li>5. Sufficient experimental information is provided to substantiate and evaluate whether the study conclusions and endpoints are robust. e.g. Were metabolites identified by appropriate techniques?</li> <li>6. Validated analytical methodology employed. e.g. were representative clear chromatograms provided to support metabolite identification?</li> <li>7. Study conditions do not interfere with the interpretation of the study results. e.g. if the test item is photolabile was the study conducted outdoors?</li> </ol>
<p><b>CA 6.3 Magnitude of Residues Trials in Plants</b></p>	<p>Published monitoring reports were not considered relevant due to the fact that it would not be possible to determine whether or not a misuse scenario had resulted in the residue levels reported.</p> <p><u>Crop Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Applicable test species</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols.</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>6. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</li> <li>7. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Notes for above criteria</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content) e.g. was the formulation comparable to the proposed representative formulation?</li> <li>2. Applicable test species e.g. is it a representative use crop?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. Is the GAP relevant? Correct rate, application method, interval, PHI, spray volume, BBCH (if applicable), region, indoor/outdoor, control samples taken?</li> </ol>

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<p>e.g. were weather details available?  e.g. were the control plots well separated from treated plots?  e.g. was the field phase conducted according to GLP?  e.g. were samples stored deep frozen? Were appropriate numbers of samples taken, e.g. 2kg of apples?  e.g. was appropriate sampling methodology employed? Was the sample handling traceable?</p> <p>4. Trial site/test system not previously exposed to the test material or other contaminants.  e.g. Plot history supplied, e.g. evidence that compound not used that year or previous year, and information on other plant protection products (e.g. to check for common metabolites).</p> <p>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.  Examples as in 3 above and also, have they proposed an endpoint, e.g. MRL, what statistical methods have they used for this?</p> <p>6. Study conditions should not interfere with the interpretation of the study results.</p> <p>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.  e.g. Was a validated method used, were acceptable recoveries obtained, were control samples analysed, were control samples 'clean', were representative clear chromatograms provided, Was the analytical phase conducted according to GLP? Were all components of the residue definition analysed for? Were samples analysed within a time period covered by storage stability data?</p>
CA 6.4 Livestock Feeding Studies	<p>Same criteria as for crop studies, examples could be as above with the following additions.</p> <p><u>Livestock Feeding Studies Notes</u></p> <p>1. Well defined test material (including purity/content)  2. Applicable test species  e.g. Ruminant, poultry, pig, fish, any edible animal.</p> <p>3. Study conditions should not differ significantly from recommended protocols.  e.g. is the dosing level extreme?  e.g. was the application form appropriate, e.g. capsule?  e.g. was the number of test species correct, e.g. three cows, nine hens?  e.g. was the dosing period appropriate, e.g. minimum 28 days?  e.g. were control animals included?  e.g. were the animals healthy?  e.g. were the animals acclimatized?</p> <p>4. Trial site/test system not previously exposed to the test material or other contaminants.  e.g. is it clear that additional animal feed did not contain treated substance?</p> <p>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</p> <p>6. Study conditions should not interfere with the interpretation of the study results.</p> <p>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</p>
CA 6.5 Effects of Processing	<p><u>High Temperature Hydrolysis</u></p> <p>1. Well defined test material (including purity/content)  e.g. if radiolabelled test item was used, was an appropriate isotope used (e.g. <sup>14</sup>C and <u>not</u> <sup>3</sup>H)?  e.g. if radiolabelled test item was used, was the labelling position(s) appropriate to capture potential metabolites?  e.g. if radiolabelled test item was used, was the specific activity adequate to meet an LOQ of 0.01 mg/kg?</p>

Data requirements(s) (indicated by the correspondent CA data point(s))	Criteria for relevance
	<p>N.B. If water solubility of test item is &lt; 0.01 mg/L then no study is required and can be deemed non-relevant</p> <ol style="list-style-type: none"> <li>2. Applicable test system e.g. Was the test undertaken in a <u>sterilised</u> buffer medium?</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols. e.g. Were the temperature and pH conditions applied typical of processing operations carried out on commodities relevant to the test item? e.g. were samples stored deep frozen?</li> <li>4. Trial site/test system not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust. Examples as in 3 above e.g. Were metabolites identified by appropriate techniques (e.g. co-chromatography with known standards using two dissimilar chromatographic systems or by techniques capable of positive structural identification e.g. MS, NMR)?</li> <li>6. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc. e.g. Were relevant control experiments carried out when harsher techniques (e.g. acid/base hydrolysis) were used to identify metabolites (i.e. to ensure metabolites identified are not merely artefacts)? e.g. were representative clear chromatograms provided to support metabolite identification? e.g. where sample analysis exceeded 6 months from sample collection was storage stability of samples demonstrated?</li> <li>7. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Field Studies</u></p> <ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Applicable test species</li> <li>3. Study conditions should not differ significantly from guidelines and recommended protocols.</li> <li>4. Trial site not previously exposed to the test material or other contaminants.</li> <li>5. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>6. Study conditions should not interfere with the interpretation of the study results.</li> <li>7. Validated Analytical methodology employed, e.g. control samples used, acceptable recoveries obtained, clear example chromatograms etc.</li> </ol>
<b>CA 6.6 Residues in Rotational crops</b>	Same criteria as for crop residue studies, examples could be subtly different, e.g. acceptable PBIs, crop types, again monitoring information should not be considered relevant.
<b>CA 6.7 Proposed residue definition and MRLs</b>	Residue definition would only be affected if data generated in another section, e.g. metabolism/tox. MRLs would only be affected if residues generated and this is covered under 6.3.
<b>CA 6.8 Proposed Safety Intervals</b>	Not required. Any animal safety reports that might affect withholding periods would be covered in the review of literature in the Toxicology Section.
<b>CA 6.9 Risk Assessment</b>	Not required – any adverse findings for the risk assessment will have to be due to a data point from one of the other sections, and are therefore covered in other sections of this document.
<b>CA 6.10 Other Studies</b>	Not required.

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

**Table Appendix 1-4: List of Criteria for relevance for Ecotoxicology studies**

<b>Data requirements(s) (indicated by the correspondent CA data point (s))</b>	<b>Criteria for relevance</b>
Ecotoxicological studies (CA 8.1 to 8.9)	<p><u>Laboratory Studies</u></p> <ol style="list-style-type: none"> <li>6. Well defined test material (including purity/content)</li> <li>7. Number of organisms per group sufficient to establish a statistical significance</li> <li>8. Applicable test species</li> <li>9. Test organisms are not previously exposed to the test material or other contaminants</li> <li>10. Several dose levels tested, at least 3, including a negative control, to establish a dose-response, unless the study design is specifically a limit test. Control must be run concurrently with treatments and mortality to be within test validity criteria.</li> <li>11. Exposure route is clearly defined, is environmentally relevant and, if appropriate, suitably quantified.</li> <li>12. If conducted, analytical confirmation of dosing or sufficient information provided to determine concentrations were within acceptable range (e.g. 80-120%) of nominal targets.</li> <li>13. Effects are related to single test item, and a quantitative relationship exists between the reported endpoint and risk assessment endpoints of growth, mortality, behaviour and/or reproduction.</li> <li>14. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust.</li> <li>15. Study conditions should not differ significantly from recommended protocols.</li> <li>16. Study conditions should not interfere with the interpretation of the study results.</li> </ol> <p><u>Field Studies</u></p> <ol style="list-style-type: none"> <li>17. Appropriate and relevant geoclimatic conditions (setting), appropriate application method and rates (exposure) and observation data (biological relevance) to derive endpoints.</li> <li>18. Well defined test material (including purity/content)</li> <li>19. Applicable test species</li> <li>20. Exposure route is clearly defined, is environmentally relevant and, if appropriate, suitably quantified.</li> <li>21. Sufficient experimental information provided to substantiate and evaluate whether the study conclusions and endpoints are robust (e.g. pre-treatment details, characterisation of physico-chemical parameters, replication, statistical methods and appropriate sampling regime).</li> <li>22. Study conditions should not differ significantly from recommended protocols, if available for field study.</li> </ol> <p>Study conditions should not interfere with the interpretation of the study results</p>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

**Table Appendix 1-5: List of Criteria for relevance for Environmental Fate**

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
Route and rate of degradation in soil – Laboratory Studies – aerobic and anaerobic, parent and metabolites CA 7.1.1 CA 7.1.1.1 CA 7.1.1.2	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Soil(s) must be agricultural and relevant for the EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 307)</li> <li>3. Soil collection, preparation and storage did not differ significantly from recommended protocols</li> <li>4. Test soils had not previously been exposed to the test material or structural analogues.</li> <li>5. Experimental conditions did not differ significantly from recommended protocols e.g. temperature and moisture</li> <li>6. Application rate is within the range of the proposed use and can be verified from the data (time zero samples)</li> <li>7. Sufficient number of samples taken to determine kinetics (minimum 5)</li> <li>8. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods</li> <li>9. Analytical method well described, LOD/LOQ at appropriate level</li> <li>10. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%.</li> <li>11. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> <li>12. Identification of 'new' metabolites is robust with appropriate details of method used</li> <li>13. Anaerobic conditions are verified by measurement</li> </ol>
Route and rate of degradation in soil – Field Studies CA 7.1.2.2	<ol style="list-style-type: none"> <li>1. In addition to criteria under laboratory route and rate:</li> <li>2. Field site(s) must be geoclimatically relevant for the EU</li> <li>3. Adequate weather data available to verify relevance of study</li> <li>4. Application technique relevant to proposed use (foliar, ST granule etc)</li> <li>5. Sufficient sampling detail and description of sample handling prior to analysis</li> <li>6. Initial and procedural recoveries are adequate to support the conclusions, e.g. 70-120%.</li> </ol>
Soil photolysis CA 7.1.1.3	In addition to criteria under laboratory route and rate: <ol style="list-style-type: none"> <li>1. Light source was suitable with details of spectrum and intensity available</li> <li>2. Dark control included and reported</li> </ol>
Mobility studies Adsorption, desorption – parent and metabolites CA 7.1.3 Column or TLC leaching CA 7.1.4.1.1, CA 7.1.4.1.2	<ol style="list-style-type: none"> <li>1. Well defined test material (including purity/content)</li> <li>2. Soil(s) must be agricultural and relevant for EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 106)</li> <li>3. Soil collection, preparation and storage did not differ significantly from recommended protocols</li> <li>4. Test soils had not previously been exposed to the test material or structural analogues.</li> <li>5. Experimental conditions did not differ significantly from recommended protocols</li> <li>6. Application rate is appropriate to the proposed use and can be verified from the data</li> <li>7. Sufficient number of samples taken to determine isotherm (if done)</li> <li>8. Stability of the test item in the system was demonstrated</li> <li>9. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods</li> <li>10. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%</li> <li>11. Analytical method well described, LOD/LOQ at appropriate level</li> </ol>

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
	12. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included
Lysimeter studies CA 7.1.4.2	In addition to criteria under laboratory route and rate:  1. Field site(s) must be geoclimatically relevant for the EU 2. Adequate weather data available to verify relevance of study. Combined rainfall/irrigation sufficient to meet guideline requirements 3. Minimum 1 m depth soil monolith 4. Study continued for sufficient years to support the conclusions
Field leaching CA 7.1.4.3.	In addition to criteria under laboratory route and rate:  1. Field site(s) must be geoclimatically relevant for the EU 2. Adequate weather data and groundwater data (depth, direction) available to verify the validity of study 3. Installation and operation of lysimeters and/or wells and samplers follows recommended protocols 4. Study continued for sufficient years to support the conclusions
Hydrolysis CA 7.2.1	1. Well defined test material (including purity/content) 2. Experimental conditions should not differ significantly from recommended protocols 3. Application rate is within an acceptable the range (e.g. consider solubility) and can be verified from the data (time zero samples) 4. Sufficient number of samples taken to determine kinetics (minimum 5) 5. Analytical method well described, LOD/LOQ at appropriate level 6. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. >90%. 7. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included 8. Identification of 'new' metabolites is robust with appropriate details of method used
Aqueous photolysis CA 7.2.1.2	In addition to criteria under hydrolysis:  1. Light source was suitable with details of spectrum and intensity available 2. Dark control included and reported
Degradation in aquatic systems CA 7.2.2	1. Well defined test material (including purity/content) 2. Water(s) and sediment(s) must be from an agricultural area and relevant for the EU e.g. from temperate zone, no extreme characteristics (e.g. meets the criteria in OECD 308) 3. Water/sediment collection, preparation and storage do not differ significantly from recommended protocols 4. Experimental conditions do not differ significantly from recommended protocols e.g. temperature and aeration 5. Application rate is within the range of the proposed use and can be verified from the data (time zero samples) 6. Sufficient number of samples taken to determine kinetics (minimum 5) 7. Extraction system was appropriate e.g. avoidance of excessive or inadequate methods 8. Analytical method well described, LOD/LOQ at appropriate level 9. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included

Data requirements(s) (indicated by the correspondent CA data point (s))	Criteria for relevance
	<ol style="list-style-type: none"> <li>10. Mass balance or recovery for radiolabelled and unlabelled studies respectively is adequate to support the conclusions, e.g. &gt;90%</li> <li>11. Identification of 'new' metabolites is robust with appropriate details of method used</li> <li>12. Anaerobic conditions are verified by measurement</li> </ol>
Degradation in the saturated zone CA 7.2.3	<ol style="list-style-type: none"> <li>1. For laboratory studies refer to criteria under laboratory route and rate</li> <li>2. Field site(s) must be geoclimatically relevant for the EU</li> <li>3. Adequate site characterisation data available e.g. soils, geology, hydrology</li> <li>4. Installation of samplers e.g. wells, lysimeters follows recommended protocols</li> <li>5. Analytical method well described, LOD/LOQ at appropriate level</li> <li>6. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> </ol>
Route and rate of degradation in air CA 7.3.1	<ol style="list-style-type: none"> <li>1. Experimental conditions or calculations differ significantly from recommended protocols</li> <li>2. Analytical method well described, LOD/LOQ at appropriate level</li> <li>3. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. for unlabelled studies are suitable blank controls included</li> </ol>
Monitoring CA 7.5	<ol style="list-style-type: none"> <li>1. Site(s) or areas must be geoclimatically relevant for the EU</li> <li>2. Adequate site characterisation data available e.g. soils, geology, hydrology</li> <li>3. Installation of samplers e.g. wells, lysimeters follows recommended protocols OR adequate description of wells is available (depth of well, length of screen, depth of screen opening, depth of groundwater)</li> <li>4. Appropriate sampling methodology.</li> <li>5. Analytical method well described, LOD/LOQ at appropriate level</li> <li>6. Analytical method appears robust with suitable reproducibility and supports the conclusions made e.g. suitable blank controls included</li> <li>7. For surface water: description of sampling methodology and handling of detects (peaks, interpolated time-step?), linked to rainfall intensity and volume). Discharge volumes, catchment drained area.</li> </ol>

\* Recommended protocols under each data point include but are not limited to those listed in the Commission Communications 2013/C 95/01 and 2013/C 95/02

## Appendix 2 Detailed Search Parameters for each named Dossier section

### Appendix 2.1 Product Chemistry

Table Appendix 2.1-1: Detailed Search Parameters for Product Chemistry studies (CA 2.1 to 2.15)

Search Strategy	
Chemical Names:	
1,2,4-Triazole (CAS: 288-88-0)	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE ((VAPOUR OR VAPOR) (3A) PRESSURE?) OR SOLUBILITY?)
L2	QUE ((PARTITION(3A) COEFF?) OR EXPLOSIV? OR OXIDI!ING?)
L3	QUE (OXIDI!ED? OR FLAMMAB? OR (FLASH(3A) POINT?))
L4	QUE (VOLATIL? OR VISCOS? OR VISCOUS? OR (LOG(W) KOW))
L5	QUE (VAPORI!AT? OR VAPOURI!AT? OR VAPOR!ED? OR VAPOURI!ED?)
L6	QUE ((SPECIFIC(3A) GRAVITY?) OR ((MELTING OR BOILING) (2W) POINT))
L7	QUE (EVAPORAT? OR DENSITY OR LOGP OR (LOG(W) P) OR KOC)
L8	QUE ((DIFFUSION(3A) COEFF?) OR (DISSOCI?(3A) CONSTANT?))
L9	QUE (ANTIINFLAMM? OR ANTIIGNIT? OR IGNIT? OR COMBUST?)
L10	QUE ((L1 OR L2 OR L3) OR (L4 OR L5 OR L6) OR (L7 OR L8 OR L9))

**Table Appendix 2.1-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.	
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)	
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.	
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.	
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.	
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.	

Provider	Database	Justification	Limits applied
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily	
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.	
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)	
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.	
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly	
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.	

Provider	Database	Justification	Limits applied
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly. (Searches 1-5 only)	
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.	
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.	

\* Total number of summary records retrieved after removing duplicates

**Table Appendix 2.1-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.1-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.1-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.2 Toxicology

**Table Appendix 2.2-1: Detailed Search Parameters for Toxicological and Toxicokinetic studies (CA 5.1 to 5.9)**

Search Strategy	
Chemical Names:	
1,2,4-Triazole (CAS: 288-88-0)	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE (MUTAG? OR CANCER? OR TERATO? OR GENETOX? OR CARCIN?)
L2	QUE (TUMOUR? OR TUMOR? OR CYTOTOX? OR GENOTOX? OR MELANOM?)
L3	QUE (NEUROTOXI? OR LD50 OR IC50 OR ((LD OR IC)(W)50))
L4	QUE (((LONG OR SHORT)(W)TERM?)(L)(EFFECT? OR STUD? OR TOXIC?))
L5	QUE (ENDOCRIN? OR INHALAT? OR IRRITAT? OR REPROTOX?)
L6	QUE (PERCUTANEOU? OR DERMAL? OR ORAL? OR INTOXICAT? OR INGEST?)
L7	QUE (((REPRODUCT? OR EMBRYO? OR FOET? OR DEVELOP?)(5A)TOXI?))
L8	QUE ((ACUTE? OR CHRONIC?)(5A)(EFFECT? OR TOXIC? OR TOXIN#))
L9	QUE (GIRL# OR CHILD OR CHILDREN OR PATIENT# OR HUMAN# OR MAN)
L10	QUE (MEN OR WOM!N OR BOY# OR WORKER# OR OPERATOR# OR FARMER#)
L11	QUE (APPLICATOR# OR PERSONNEL? OR WORKFORCE OR EMPLOYEE#)
L12	QUE (MAMMAL? OR RODENT# OR RAT OR RATS OR MOUSE OR MICE)
L13	QUE (ACCIDENT? OR POISON? OR ALLERG? OR EXPOSURE? OR EXPOSE#)
L14	QUE (OCCUPAT? OR EPIDEMIOL? OR SENSITIZ? OR SENSITIS?)
L15	QUE ((HEALTH OR ADVERSE)(5A)(EFFECT# OR RISK#))
L16	QUE (MEDICAL OR (FIRST(W)AID) OR (TOXIC?(3A)STUD?) OR THERAPE?)
L17	QUE (TOXICOKINETIC# OR EXTRACTAB? OR (RADIO(W)LABEL?))
L18	QUE (DOG# OR (GUINEA(W)PIG#) OR RABBIT# OR SKIN? OR EYE#)
L19	QUE (HAND# OR DERMAL? OR BYSTANDER# OR RESIDENT#)
L20	QUE ((ROTAT? OR SUCCEEDING OR FOLLOWING)(3A)CROP#)
L21	QUE ((DIETARY OR CONSUM? OR CUMULAT? OR AGGREGAT?)(5A)RISK?)
L22	QUE (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR L17 OR L18 OR L19 OR L20 OR L21)

## Search Strategy

- L2 QUE SPE=ON ABB=ON PLU=ON ABNORMAL BEHAVIOUR OR ABORTION OR ACCEPTABLE DIETARY INTAKE OR ACCEPTABLE OPERATOR EXPOSURE LEVEL OR ACUTE DERMAL APPLICATION OR ACUTE DERMAL TOXICITY OR ACUTE EFFECT OR ACUTE EXPOSURE OR ACUTE ORAL TOXICITY OR ACUTE REFERENCE DOSE
- L3 QUE SPE=ON ABB=ON PLU=ON ACUTE TOXICITY OR ADDITIVE TOXICITY OR ADULT MORTALITY OR ADVERSE EFFECT OR ADVERSE EVENT OR AERIAL EXPOSURE OR AIR BLAST OR AIRBLAST OR ANORMAL BEHAVIOUR OR ASSESSMENT(1W)RISK OR AVERSIVE RESPONSE OR BBA MODEL OR BEHAVIOUR
- L4 QUE SPE=ON ABB=ON PLU=ON BEHAVIOURAL ANOMALIES OR BIO MONITORING OR BIOMONITORING OR BIRTH RATE OR BODY ORGANS OR BODY WEIGHT OR BREEDING LOSS OR BYSTANDER OR CARCINOGEN OR CARCINOGENIC OR CARCINOGENICITY OR CHANGE (1W) BODY WEIGHT OR CHEMOSIS OR CHRONIC CONCERN
- L5 QUE SPE=ON ABB=ON PLU=ON CHRONIC EFFECT OR CHRONIC STUDY OR CHRONIC TEST OR CHRONIC TOX OR CHRONIC TOXICITY OR CHRONIC TOXICOLOGICAL STUDY OR CLASTOGENICITY OR CLINICAL SIGN OR CLINICAL SYMPTOM OR CONJUNCTIVAE OR CONJUNCTIVAL CHEMOSIS OR CONJUNCTIVAL SAC
- L6 QUE SPE=ON ABB=ON PLU=ON CONSTIPATIO OR CONSUMER OR CONTACT TOXICITY OR CORNEA OR CORNEAL OPACITY OR CREATININE OR CROP INSPECTION OR CYTOPLASMIC CHANGES(1W)HEPATOCYTES OR DAMAGE TO EYES OR DEAD EMBRYO OR DEAD FETUS OR DEAD PUP OR DEATH OR DECREASE(1W)BODY LENGTH
- L7 QUE SPE=ON ABB=ON PLU=ON DERMAL OR DEVELOPMENTAL TOXICITY OR DIARRHEA OR DIE OR DIED OR DIETARY EXPOSURE OR DIETARY INTAKE OR DIETARY TOXICITY OR DIPPING OR DISLODGEABLE FOLIAR RESIDUE OR DISORIENTING OR DISTURBANCE(1W)VIABILITY OR DOG OR DUST DRIFT
- L8 QUE SPE=ON ABB=ON PLU=ON EFFECT(1W)(BODY WEIGHT OR FOOD CONSUMPTION OR BODY ORGAN) OR EMBRYO OR EMBRYOPATHY OR EMBRYOTOX OR ENDOCRINE(W)DISRUPT? OR ENDOCRINE MODULATION OR ENGINEERING CONTROL OR EPIDEMIOLOGICAL OR EPIDEMIOLOGY OR ERYTHEMA
- L9 QUE SPE=ON ABB=ON PLU=ON ESCHAR OR EUROPOEM OR EXPOSE OR EXPOSURE OR EYE IRRITATION OR FECUNDITY OR FEEDING STUDY OR FERTILITY RATE OR FETOTOX OR FETOTOXICOLOGICAL OR FETOTOXICOLOG Y OR FOETAL CROWN-RUMP LENGTH OR FOETAL DEVELOPMENT OR FOGGING OR FOLIAR DEPOSITION
- L10 QUE SPE=ON ABB=ON PLU=ON FOLIAR DISLODGEABLE RESIDUE OR GAIN(1W)BODY WEIGHT OR GASTROINTESTINAL OR GENOTOX OR GENOTOXIC OR GENOTOXICITY OR GENOTOXICOLOGICAL OR GESTATION OR GROUND BOOM OR GROUNDBOOM OR GUINEA PIG OR HAIR LOSS OR HAND TO MOUTH OR HANDHELD OR HAND-HELD
- L11 QUE SPE=ON ABB=ON PLU=ON HAZARD OR HEALTH RISK OR HEPATOTOXIN OR HERSHBERGER ASSAY OR HUMAN EXPOSURE OR HUMAN HEALTH OR HUMAN MONITORING OR IMMUNOTOXICITY OR IMPLANTATION LOSS OR INCREASE (1W) LIVER WEIGHT OR INDURATION (2W) SKIN OR INFERTILITY
- L12 QUE SPE=ON ABB=ON PLU=ON INHALATION OR INHALATORY ABSORPTION OR INHALATORY EXPOSURE OR INHALATORY RISK OR INTOXICATION OR INTRAPERITONEAL OR INTRAVENOUS OR INTRAVENOUSLY OR IRRITANT OR IRRITATING (1W)SKIN OR IRRITATION OR IRRITATION (2W)(IRIS OR SKIN)
- L13 QUE SPE=ON ABB=ON PLU=ON KNAPSACK OR LABORED BREATHING OR LACERATION (2W) SKIN OR LACTATION OR LC50 OR LD50 OR LIGHT-COLORED FECES OR LITTER SIZE OR LITTER WEIGHT OR LIVER OR LIVING PUPS OR LOCAL LYMPH NODE OR LONG-TERM EXPOSURE OR LONGTERM STUDY OR LONG-TERM STUDY
- L14 QUE SPE=ON ABB=ON PLU=ON LONGTERM TOXICOLOGICAL OR LONG-TERM TOXICOLOGICAL OR LOSS (1W)(BODY WEIGHT OR HAIR) OR MALFORMATIO N OR MAMMAL OR MAMMALIAN OR MARGIN (1W) SAFETY OR MATERNAL TOXICITY OR MATING BEHAVIOUR OR MEDICAL DATA OR METABOLIC PATH

Search Strategy	
	OR METABOLIC PATHWAY
L15	QUE SPE=ON ABB=ON PLU=ON MONKEY OR MORTALITY OR MOUSE OR MRL EXCEEDANCE OR MRL VIOLATION OR MULTIGENERATION OR MUTAGEN OR MUTAGENIC OR MUTAGENICITY OR NECROPSY OR NEUROTOXIC OR NEUROTOXICITY OR NO OBSERVED ADVERSE EFFECT LEVEL OR NO OBSERVED EFFECT LEVEL
L16	QUE SPE=ON ABB=ON PLU=ON NOAEL SUBCHRONIC DOG OR NON DIETARY EXPOSURE OR NON-DIETARY EXPOSURE OR NO-OBSERVED ADVERSE EFFECT LEVEL OR NURSING OR OBJECT TO MOUTH OR OCCUPATIONAL EXPOSURE OR OEDEMA OR OFFSPRING OR OPACITY OR OPERATOR OR ORAL ABSORPTION OR ORAL TOXICITY
L17	QUE SPE=ON ABB=ON PLU=ON ORALLY OR OVULATION OR PARENTERAL OR PARTURITION OR PASSIVE DOSIMETRY OR PATHOLOGICAL OR PATHOLOGY OR PATIENT OR PEELING (1W) SKIN OR PENETRATION FACTOR OR PERCUTANEOUS OR PERSONAL PROTECTIVE EQUIPMENT OR PHOTOTOXICITY OR PILOERECTION
L18	QUE SPE=ON ABB=ON PLU=ON PLACENTAL WEIGHT OR POISON OR POISONING OR POST-MORTEM EXAMINATIONS OR POSTNATAL OR POST-NATAL OR PREGNANCY OR PREGNANT OR PREMATURE BIRTH OR PRENATAL TOX OR PRENATAL TOXICOLOGY OR PRIMATE OR PROTECTIVE CLOTHING OR PROTECTIVE GARMENT
L19	QUE SPE=ON ABB=ON PLU=ON PROTECTIVE GLOVE OR PUBLIC HEALTH OR RABBIT OR RAT OR RE ENTRY OR REDDENING (1W) TREATMENT AREA OR REDNESS OR REDUCED BODY WEIGHT OR REDUCED BODY WEIGHT GAIN OR REENTRY OR RE-ENTRY OR REFERENCE DOSE OR RELEVANT (2W) REPRODUCTIVE SUCCESS
L20	QUE SPE=ON ABB=ON PLU=ON REPRODUCTION OR REPRODUCTIVE OR REPROTOX OR RESIDENT OR RESIDENTIAL EXPOSURE OR RESIDUE IN OR RESPIRATORY EXPOSURE OR RESPIRATORY PROTECTIVE EQUIPMENT OR RISK ASSESSMENT OR RISK (2W) (CONSUMER OR OPERATOR) OR SEXUAL
L21	QUE SPE=ON ABB=ON PLU=ON RISK (1W) SERIOUS DAMAGE (1W) EYES OR SAFE OR SAFETY OR SAFETY ASSESSMENT OR SAFETY PRECAUTION OR SECONDARY EFFECT OR SECONDARY POISONING OR SEEDTROPEX OR SENSITISATION BY SKIN CONTACT OR SENSITISER OR SENSITISING TESTS OR SENSITIZER
L22	QUE SPE=ON ABB=ON PLU=ON SHORT LONG TERM EXPOSURE OR SHORT-TERM EXPOSURE OR SHORT-TERM TOXICITY OR SHORT-TERM TOXICOLOGICAL OR SIDE EFFECT OR SIGNS (1W)(AGGRESSION OR TOXICITY) OR SKIN IRRITANT OR SKIN IRRITATION OR SKIN SENSITISATION OR SKIN SENSITISING
L23	QUE SPE=ON ABB=ON PLU=ON SKIN SENSITIZATION OR SKIN SENSITIZING OR SLIGHTLY HARMFUL OR SPASTIC GAIT OR SPERMATOGENESIS OR SPLEEN OR SPRAY DRIFT OR STOMACH LESIONS OR STUNTED FETUS OR SUBACUTE OR SUB-ACUTE OR SUBCHRONIC OR SUB-CHRONIC OR SUBLETHAL OR SUB-LETHAL
L24	QUE SPE=ON ABB=ON PLU=ON SUBSTANCE-RELATED EFFECT OR SURVIVAL OR SYMPTOMS (1W) TOXICITY OR SYSTEMIC EXPOSURE OR SYSTEMIC INTOLERANCE REACTIONS OR TERATOGEN OR TERATOGENIC OR TERATOGENICITY OR TERATOLOGY OR TESTICULAR DEVELOPMENT
L25	QUE SPE=ON ABB=ON PLU=ON ACTIVE INGREDIENTS (1W) SAFE OR (COMPOUND OR COMPOSITION OR FUNGICIDE OR INSECTICIDE OR PESTICIDE) (1W)SAFE OR THEORETICAL TOXICITY OR TOPICAL OR TOTAL DIET STUDY OR TOX OR TOXIC OR TOXICITY OR TOXICOGENOMIC OR TOXICOKINETICS OR TOXICOL
L26	QUE SPE=ON ABB=ON PLU=ON TOXICOLOGICAL OR TOXICOLOGY OR TRACTOR MOUNTED OR TRANSDERMAL OR TRANSFER COEFFICIENT OR TRANSFERABLE RESIDUES OR TREATMENT RELATED EFFECTS OR TUMORIGEN OR TUNNEL TEST OR TWO-GENERATION OR UNACCEPTABLE EFFECTS OR UTEROTROPHIC ASSAY
L27	QUE SPE=ON ABB=ON PLU=ON VERTEBRATE OR VIABILITY (1W) EMBRYO OR WEANING OR WEIGHT ALTERATION OR WEIGHTS OR WHOLE BODY DOSIMETER OR WHOLE BODY DOSIMETRY OR WORKER

**Table Appendix 2.2-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.	
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)	
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.	
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.	
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.	
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.	

Provider	Database	Justification	Limits applied
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily	
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.	
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)	
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.	
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly	
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.	

Provider	Database	Justification	Limits applied
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (Searches 1-5 only).	
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.	
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.	

\* Total number of summary records retrieved after removing duplicates

**Table Appendix 2.2-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.2-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.2-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.3 Metabolism and Residues

**Table Appendix 2.3-1: Detailed Search Parameters for Metabolism and Residues data – Search Terms**

Search Strategy		
Chemical Names:		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)		
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-		
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)		
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)		
1,2,4-Triazol-1-ylacetic acid		
1,2,4-Triazole-1-acetic acid		
1H-1,2,4-Triazol-1-ylacetic acid		
2-(1,2,4-Triazol-1-yl) acetic acid		
2-(1H-1,2,4-Triazol-1-yl) acetic acid		
1H-1,2,4-Triazole (CA Index Name)		
s-Triazole (8CI)		
3,4-Diazapyrrole		
4H-1,2,4-Triazole		
PLUS		
L1	QUE	(METABOL? OR RESIDUE# OR TRANSFORM? OR BIOTRANSFORM?)
L2	QUE	(DEGRAD? OR BIODEGRAD? OR FATE# OR MRL OR MRLS)
L3	QUE	(CONJUGAT? OR EXCRET? OR ELIMINAT?)
L4	QUE	(FOOD# OR FEED# OR DIET# OR DIETARY OR CONSUMER? OR HUMAN#)
L5	QUE	(CONTAMINAT? OR SAFE? OR EXPOS? OR ANALY? OR ASSES?)
L6	QUE	(INTAKE? OR (IN(W)TAKE?) OR SURVEY? OR RISK?)
L7	QUE	(TOXIC? OR STUDY? OR STUDIES?)
L8	QUE	(L4(10A) (L5 OR L6 OR L7))
L9	QUE	(LIVESTOCK# OR COW# OR GOAT# OR CATTLE# OR BULLOCK#)
L10	QUE	(BOVINE? OR BOVIDAE? OR BOS OR BULL# OR HEIFER? OR CAPRA#)
L11	QUE	(SHEEP# OR EWE OR EWES OR RAM# OR SWINE# OR PIGLET#)
L12	QUE	(PIG# OR SUIDAE? OR SUS OR OVIS OR OX OR OXEN)
L13	QUE	(RUMINANT? OR HEN# OR CHICKEN# OR FOWL# OR TURKEY?)
L14	QUE	(DUCK# OR GOOSE OR GEESE OR CAPON# OR POULTRY?)
L15	QUE	(MEAT OR MILK OR EGG# OR TISSUE#)
L16	QUE	(( (BROKEN? OR BREAK?) (W) (DOWN OR UP)) OR BREAKDOWN?)
L17	QUE	(BREAKSDOWN? OR UPTAKE? OR PROCESSING? OR BOUND?)
L18	QUE	(( (NON(W)EXTRACTAB?) OR (ROTATIONAL(3A)CROP#))
L19	QUE	(( (L1 OR L2 OR L3) OR L8 OR (L9 OR L10 OR L11 OR L12
OR		L13 OR L14) OR (L15 OR L16 OR L17 OR L18))

**Table Appendix 2.3-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied	Number *
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	10 years	368
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.		
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		

Provider	Database	Justification	Limits applied	Number *
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAPLUS, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly		
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly. (Searches 1-5 only)		
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		
	ANABSTRACT	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		

\* Total number of summary records retrieved after removing duplicates – numbers in parentheses are the summary records retrieved in the initial search and then the 1<sup>st</sup> and 2<sup>nd</sup> top-up respectively)

**Table Appendix 2.3-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.3-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.3-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.4 Ecotoxicology

**Table Appendix 2.4-1: Detailed Search Parameters for Ecotoxicological studies (CA 8.1 to 8.9)**

Search Strategy	
L1	QUE (288-88-0 OR 1450828-63-3 OR 28711-29-7 OR 333354-47-5)
L2	QUE (86362-20-1 OR 114419-45-3 OR 4819-36-7)
L3	QUE (1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YLACETIC (W) ACID)
L4	QUE (1 (W) 2 (W) 4 (W) TRIAZOLE (W) 1 (W) ACETIC (W) ACID)
L5	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YLACETIC (W) ACID)
L6	QUE (2 (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YL (W) ACETIC (W) ACID)
L7	QUE (2 (2W) 1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL (W) 1 (W) YL (W) ACETIC (W) ACID)
L8	QUE ((1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOLE) OR (S (W) TRIAZOLE))
L9	QUE ((3 (W) 4 (W) DIAZAPYRROLE) OR (4H (2W) 1 (W) 2 (W) 4 (W) TRIAZOLE))
L10	QUE (25167-73-1 OR 27236-77-7 OR 116421-29-5 OR 1001118-18-8)
L11	QUE (3 (2W) 1H (W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) YL (W) ALANINE)
L12	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) PROPANOIC (W) ACID)
L13	QUE (1H (2W) 1 (W) 2 (W) 4 (W) TRIAZOL# (W) 1 (W) PROPIONIC (W) ACID)
L14	QUE ((2 (W) HYDROXY (W) 3) (2W) (L12 OR L13))
L15	QUE ((ALPHA (W) (HYDROXY OR AMINO)) (3A) (L12 OR L13))
L16	QUE (L1-11 OR L14-15)
<b>PLUS</b>	
L1	QUE (RIPARIAN? OR REPTILE? OR SNAKE? OR LIZARD?)
L2	QUE (TORTOISE? OR TURTLE? OR TERRAPIN? OR CROCODIL?)
L3	QUE (ALLIGATOR? OR CAIMAN? OR GHARIAL? OR HOVERFLIES)
L4	QUE ((MEADOW# (W) VOLE#) OR PSEUDOKIRSCHNERIELLA)
L5	QUE (RHAPHIDOCELIS OR NITZSCHIA OR CYCLOTELLA OR MICROCYSTIS)
L6	QUE (OSCILLATORIA OR APHANIZOMENON OR ANKISTRODESMUS)
L7	QUE (TEILINGRIA OR MONORAPHIDIUM OR RADIOCOCCACAE OR

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TETRASPORALES)		
L8	QUE	(TETRAEDRON OR TREUBARIA OR WILLEA OR COSMOCLADIUM)
L9	QUE	(HYPOASPIS OR (SOIL(3A)MICROORGAN?) OR ECHINOCHLOA OR SPARTINA)
L10	QUE	(SALVINIA OR NAJAS OR CALLITRICHE OR MYOSOTIS OR STRATIOTES)
L11	QUE	(HIPPIRUS OR PERSICARIA OR CLOEON? OR CORBICULA?)
L12	QUE	(NEOCARIDINIA? OR NEOCARIDINA? OR MYSID? OR CICHLIDAE)
L13	QUE	(CICHLID# OR LEPOMIS? OR SERRANIDAE OR PERCIFORMES)
L14	QUE	(ICTALURUS? OR POECILIA? OR ORYZIAS? OR GASTEROSTEUS?)
L15	QUE	(GASTEROSTEIDAE OR SALVELINUS OR BRACHYDANIO? OR CARASSIUS?)
L16	QUE	(MISGUMUS? OR CYPRINODON? OR FUNDULUS? OR MISGURNUS?)
L17	QUE	(BREAM OR ROTIFER# OR GAMMARUS OR GAMMARID? OR MAYFLY?)
L18	QUE	(BIVALVE# OR MUSSEL# OR MOLLUSK# OR MOLLUSC# OR BUFO)
L19	QUE	(NEWT# OR SCALLOP# OR CLAM# OR GAMBUSIA OR OREOCHROMIS)
L20	QUE	(OSTRAC? OR TUBIFEX? OR TURBELLARIA OR COPEPODA)
L21	QUE	(PREDACE? OR PREDACI? OR PARASITOID? OR APIS OR APIDAE)
L22	QUE	(BOMBUS OR BOMBINAE OR WORM# OR LUMBRICIDAE OR LUMBRICUS)
L23	QUE	(ALLOBOPHORA? OR DENDROBAENA? OR APORRECTODEA? OR DENDRODRILUS?)
L24	QUE	(EISENIA? OR OCTOLASION? OR (LACE(W)WING#) OR NEUROPTER?)
L25	QUE	(CARABID? OR CARBUS OR STAPHYLINID? OR COCCINEL? OR ADALIA?)
L26	QUE	(STETHORUS? OR SCYMNUS? OR WASP# OR VESPIDAE OR SPHECOIDEA)
L27	QUE	(SPHECIDAE OR STIZIDAE OR OPIUS OR (ICHNEUMON(W)FL?))
L28	QUE	(ICHNEUMONID? OR BRACONID? OR CHALCID? OR CYNIP? OR APHIDI?)
L29	QUE	(EUCOILID? OR IBALIID? OR FIGITID? OR EURYTOM? OR TORYM?)
L30	QUE	(ORYM? OR EUCHARIT? OR PERILAMP? OR PTEROMAL? OR CHRYSOLAMP?)
L31	QUE	(EUPELM? OR ENCYRT? OR SIGNIPHOR? OR APHELIN? OR ELASMID?)
L32	QUE	(ELASMUS OR TETRACAMP? OR MYMAR? OR HELOR? OR PROCTOTRUP?)
L33	QUE	(DIAPRI? OR SCELION? OR PLATYGASTR? OR PLATYGASTER?)
L34	QUE	(CERAPHRON? OR MEGASPIL? OR ARANE? OR OPILION? OR PHALANG?)
L35	QUE	(ARACHNID? OR HARVESTM? OR DADDYLONGLEG? OR (DADDY(W)LONG(W)LEG?))
L36	QUE	((DADDY(W)LONGLEG?) OR COLLEMB? OR (SPRING(W)TAIL?) OR CYDNODROMUS?)
L37	QUE	(PARDOSA? OR ORIUS? OR TYPHLODROM? OR PHYTOSEIULUS? OR SYRPHID?)
L38	QUE	(METASYRPHUS? OR SYRPHUS? OR EUPEODES? OR EPISYRPHUS? OR SYRPHIAN?)
L39	QUE	(EPISTROPHE? OR AMBLYSEIUS? OR POECILUS? OR TRECHUS? OR BEMBIDION?)
L40	QUE	(NEBRIA? OR PTEROSTICHUS? OR CALOSOMA? OR TACHYPORUS? OR NABIDAE?)
L41	QUE	(GEOCORIS? OR HYMENOPT? OR HAEMATOLOECHA? OR CHRYSOPID? OR SYMPHYTA?)
L42	QUE	(OULEMA? OR APHYTIS? OR BATHYPLECTES? OR LINPHIIDAE? OR LYNPHIIDAE?)

<b>Search Strategy</b>		
L43	QUE	(LINYPHIIDAE? OR ERIGONE? OR BATHYPHANTES? OR MEIONETA? OR OEDOTHORAX?)
L44	QUE	(LEPTYHPHANTES? OR LYCOSID? OR LYCOSA? OR CHRYSOPA? OR DACNUSA?)
L45	QUE	(CYRTORHINUS? OR CRYPTOLAEMUS? OR ZETZELLIA? OR LEPTOMASTIX?)
L46	QUE	(TRICHOGRAMMA? OR ENCARSIA? OR MACROLOPHUS? OR CHRYSOPERLA?)
L47	QUE	(ALEOCHARA? OR CHRYSOPID# OR CHRYSOPIDAE OR DIABROTICA)
L48	QUE	(PALEXORISTA? OR MAMMAL## OR ANIMAL? OR RABBIT? OR RODENT#)
<b><u>BIRD PROFILE [L94]</u></b>		
L49	QUE	(BLACKBIRD# OR (BLACK(W)BIRD#) OR ((TURDUS OR T) (W)MERULA) )
L50	QUE	(CHAFFINCH? OR ((FRINGILLA OR F) (W)COELEBS) OR GREENFINCH?)
L51	QUE	(( (CARDUELIS OR C) (W)CHLORIS) OR SONGTHRUSH?)
L52	QUE	((SONG(W)THRUSH?) OR ((TURDUS OR T) (W)PHILOMELOS) OR WREN#)
L53	QUE	(( (TROGLODYTES OR T) (W)TROGLODYTES) OR (WILLOW (W) WARBLER#) )
L54	QUE	(( (PHYLLOSCOPUS OR P) (W)TROCHILUS) OR (GREAT (W)TIT#) )
L55	QUE	(( (PARUS OR P) (W)MAJOR) OR ROBIN# OR GOLDFINCH?)
L56	QUE	(( (ERITHACUS OR E) (W)RUBECULA) OR DUNNOCK#)
L57	QUE	(( (CARDUELIS OR C) (W)CARDUELIS) OR LINNET#)
L58	QUE	(( (PRUNELLA OR P) (W)MODULARIS) OR SKYLARK# OR (SKY (W) LARK#) )
L59	QUE	(( (HEDGE (W) (SPARROW# OR ACCENTOR#) ) ) )
L60	QUE	(( (CARDUELIS OR C) (W)CANNABINA) OR ((ALAUDA OR A) (W) ARVENSIS) )
L61	QUE	(( (RED (W) LEGGED (W) PARTRIDGE#) OR ((ALECTORIS OR A) (W) RUFA) ) )
L62	QUE	(( (MEADOW (W) PIPIT#) OR MEADOWPIPIT# OR ((ANTHUS OR A) (W) PRATENSIS) ) )
L63	QUE	(LAPWING# OR ((VANELLUS OR V) (W)VANELLUS) OR PEEWIT#)
L64	QUE	(STARLING# OR ((STURNUS OR S) (W)VULGARIS) )
L65	QUE	(( (TURTLE (W) DOVE#) OR ((STREPTOPELIA OR S) (W)TURTUR) )
L66	QUE	(YELLOWHAMMER# OR (YELLOW (W) HAMMER#) OR (YELLOW (W) WAGTAIL#) )
L67	QUE	(( (EMBERIZA OR E) (W)CITRINELLA) OR (YELLOW (W) WAG (W) TAIL#) )
L68	QUE	(( (MOTACILLA OR M) (W)FLAVA) OR (FAN (W) TAILED (W) WARBLER#) )
L69	QUE	(( (GREY (W) LAG (W) G!!SE) OR ((ANSER OR A) (W)ANSER) )
L70	QUE	(REEDBUNTING# OR (REED (W) BUNTING#) OR ((EMBERIZA OR E) (W) SCHOENICLUS) )
L71	QUE	(CHAFFINCH? OR BLUETIT? OR (BLUE (W) TIT?))
L72	QUE	(( (PARUS OR P) (W)CAERULEUS) OR (SYLVIA (W) COMMUNIS) )
L73	QUE	(( (GALERIDA OR G) (W)CRISTATA) OR (TREE (W) SPARROW#) )
L74	QUE	(( (COTURNIX OR C) (W)COTURNIX) OR (GREY (W) PARTRIDGE#) )
L75	QUE	(( (PERDIX OR P) (W)PERDIX) OR ((PHASIANUS OR P) (W) COLCHICUS) )
L76	QUE	(( (MILIARIA OR M) (W)CALANDRA?) OR GREYLAGG!!SE)
L77	QUE	(( (GREYLAG (W) G!!SE) OR ((COLUMBA OR C) (W)PALUMBUS?)) )
L78	QUE	(( (STREPTOPELIA OR S) (W) (ORIENTALIS? OR RISORIA?)) )
L79	QUE	(( (MOTACILLA OR M) (W)ALBA?) OR (CRESTED (W) LARK#) )

**Search Strategy**

L80 QUE ((WHITE(W)WAGTAIL#) OR (WOOD(W)PIGEON#) OR (BIRD(W)LIFE))  
 L81 QUE ((SONG(W)BIRD#) OR VANELLUS? OR (PEE(W)WIT#))  
 L82 QUE (AVIFAUNA? OR (AVI(W)FAUNA?) OR SONGBIRD?)  
 L83 QUE (ORNITHOLOG? OR PASSERINE? OR WOODPIGEON#)  
 L84 QUE (((PASSER OR P)(W)MONTANUS) OR QUAIL# OR (CALANDRA(W)LARK#))  
 L85 QUE (CISTICOLA? OR (Z(W)CISTICOLA?) OR BIRDLIFE)  
 L86 QUE (GEESE OR GOOSE OR SPARROWS OR PIGEONS OR LARK#)  
 L87 QUE (WARBLER# OR PARTRIDGE# OR BUNTING# OR WAGTAIL#)  
 L88 QUE (WHITETHROAT# OR PIED# OR (WHITE(W)THROAT#))  
 L89 QUE ((FORAGING OR FARMLAND OR GRASSLAND) (3A)BIRD#)  
 L90 QUE (BLUEBIRD# OR (ROCK(W)PTARMIGAN#) OR (BLACK(W)REDSTART#))  
 L91 QUE ((PREDATOR? OR NONTARGET? OR (NON(W)TARGET)) (3A)BIRD#)  
 L92 QUE ((CORN(W)BUNTING#) OR SERINS OR SERINUS)  
 L93 QUE (L49-L92)  
 L94 QUE L93 NOT (JAPANESE? OR JAPONICA?)

**MAMMALS PROFILE [L105]**

L95 QUE (((SMALL OR WILD) (3A)MAMMAL#) OR (WILD(3A)ANIMAL?))  
 L96 QUE (VOLE# OR GLIS OR DORMOUSE OR DORMICE OR ELIOMY#)  
 L97 QUE (LEROT# OR LAGOMORPH# OR LEPORID? OR LEPUS OR ORYCTOLAGUS?)  
 L98 QUE (HARE# OR SORICIDAE? OR SOREX? OR NEOMY# OR CROCIDURA?)  
 L99 QUE (SHREW# OR WOODMOUSE OR WOODMICE OR APODEMUS? OR MICROTUS?)  
 L100 QUE (CLETHRIONOMYS? OR CRICETIDAE? OR MICROTIN?)  
 L101 QUE (RAPTOR# OR MARMOSET# OR GOPHER# OR GRASSCUTTER#)  
 L102 QUE ((PREDATOR? OR NONTARGET? OR (NON(W)TARGET?)) (3A)MAMMAL#)  
 L103 QUE ((WOOD(W)(MOUSE OR MICE)) OR ARVICOLA?)  
 L104 QUE (MEADOW#(W)VOLE#)  
 L105 QUE (L95-L104)

**EXISTING ECOTOX PROFILE [L171]**

L106 QUE (ECOTOX? OR LC50 OR ((LC OR EC OR LR) (W)50) OR EC50 OR LR50)  
 L107 QUE (ECO OR ECOL OR ECOLOG? OR ENV OR ENVIRONM? OR AQUATIC?)  
 L108 QUE (L107(5A) (TOX? OR RISK? OR IMPACT? OR EFFECT?))  
 L109 QUE (AQUATIC? OR FRESHWATER? OR (FRESH(W)WATER?))  
 L110 QUE (FLORA OR FAUNA OR BIOTA OR ORGANISM? OR INSECT?)  
 L111 QUE (ENVIRONM? OR LIFE OR INVERTEB? OR CRUSTACE? OR SPECIES)  
 L112 QUE (ENTOMOFAUNA OR (ENTOMO(W)FAUNA))  
 L113 QUE (L109(5A) (L110 OR L111 OR L112))  
 L114 QUE (MAGNA? OR (D(W)MAGNA?) OR CHIRONOM? OR BRACHIONUS?)  
 L115 QUE (LIMNEA? OR CRASSOSTREA? OR ALGA# OR FISH OR FISHES)  
 L116 QUE (ONCORHYNCHUS? OR SALMONIDAE? OR CYPRINUS? OR CYPRINID?)  
 L117 QUE (PIMEPHALES? OR PISCES OR TROUT OR SUNFISH? OR CARP)  
 L118 QUE (MINNOW? OR (F(W)MINNOW?) OR CATFISH? OR ZEBRAFISH?)  
 L119 QUE (GOLDFISH? OR (ZEBRA(W)DANIO#) OR GUPPY OR GUPPIES)  
 L120 QUE (KILLFISH? OR FATHEAD? OR BLUEGILL? OR SALMON#)  
 L121 QUE (THUNDERFISH? OR (WATER(W)(FLY OR FLEA?)) OR WATERFLEA?)

Search Strategy		
L122 TOAD#)	QUE	(FROG# OR AMPHIBIA? OR SHRIMP# OR PRAWN# OR CRAB# OR
L123	QUE	(TADPOLE# OR CRAYFISH? OR SHELLFISH? OR LOBSTER#)
L124	QUE	(OYSTER# OR SNAIL# OR RANA OR RANIDAE? OR PLANKTON?)
L125	QUE	L106 OR L108
L126	QUE	((NONTARGET? OR (NON(W)TARGET?)) (5A) (PLANT? OR FLORA?))
L127	QUE	((AQUATIC(3A) (PLANT? OR (PHYTO(W)TOX?) OR PHYTOTOX?))
L128	QUE	(SEDIMENT? OR HYDROSOIL? OR DUCKWEED? OR PONDWEED?)
L129	QUE	((DUCK OR POND) (W)WEED#) OR MACROPHYT? OR PERIPHYTON?)
L130 HYDROCHARITA?)	QUE	(POTAMOGETON? OR CHAROPHYTA? OR ELODEA? OR
L131 CHLORELLA?)	QUE	(CERATOPHYL? OR CHLAMYDOMON? OR SELENASTRUM? OR
L132 ANABAENA?)	QUE	(SCENEDESMUS? OR SKELETONEMA? OR NAVICULA? OR
L133	QUE	(MYRIOPHYLLUM? OR GLYCERIA?)
L134	QUE	(NONTARGET? OR (NON(W)TARGET?) OR BENEFICIAL?)
L135 INSECT?)	QUE	(EFFECT? OR INVERTEB? OR ORGANISM? OR ARTHROPOD? OR
L136	QUE	(FAUNA OR SPECIES OR (ENTOMO(W)FAUNA?) OR ENTOMOFAUNA?)
L137	QUE	((L134(5A) (L135 OR L136)))
L138 HONEYBEE#)	QUE	(PREDAT? OR (NATURAL(W)ENEM?) OR BEE OR BEES OR
L139 EARTHWORM?)	QUE	(BUMBLEBEE# OR ((HONEY OR BUMBLE) (W)BEE#) OR
L140 LADYBIRD#)	QUE	((EARTH(W)WORM?) OR LADYBUG# OR LADYBEETLE# OR
L141	QUE	((LADY(W) (BUG# OR BEETLE# OR BIRD#)) OR HOVERFLY)
L142	QUE	(HOOVERFLIES OR SAWFLY OR SAWFLIES OR DRONEFLY)
L143	QUE	(DRONEFLIES OR FLOWERFLY OR FLOWERFLIES OR LACEWING?)
L144	QUE	((HOVER OR DRONE OR FLOWER OR SAW) (W) (FLY OR FLIES)))
L145	QUE	(SPIDER# OR SPRINGTAIL? OR (ROOT(W)WORM#) OR ROOTWORM#)
L146	QUE	(L137-L145)
L147 AVIFAUNA?)	QUE	(BIRD? OR AVES OR AVIAN? OR (AVI(W)FAUNA?) OR
L148	QUE	(SONGBIRD? OR (SONG(W)BIRD?) OR ORNITHOLOG?)
L149	QUE	(L147 OR L148)
L150	QUE	((WILD(3A) (LIFE OR ANIMAL#)) OR WILDLIFE OR SQUIRREL?)
L151	QUE	(VOLE# OR SCIURUS OR GLIRID? OR GLIS OR DORMOUSE)
L152	QUE	(DORMICE OR ELIOMYS OR LEROT# OR MUSTELID? OR MINK#)
L153	QUE	(MUSTELINE# OR WEASEL? OR STOAT? OR MUSTEL? OR BADGER?)
L154	QUE	(MELES OR MELINAE OR OTTER# OR LUTRA OR LUTRINAE)
L155 HARE#)	QUE	(LAGOMORPH# OR LEPORID? OR LEPUS OR ORYCTOLAGUS OR
L156	QUE	(TALPA OR MOLE OR MOLES OR HEDGEHOG? OR (HEDGE(W)HOG?))
L157 APODEMUS)	QUE	(CROCIDURA? OR SHREW# OR WOODMOUSE OR WOODMICE OR
L158	QUE	(MICROTUS OR ARVICOLA OR CLETHRIONOMYS? OR CRICETIDAE?)
L159	QUE	(ERINACEUS OR ERINACEIDAE? OR SORICIDAE? OR SOREX)
L160	QUE	(ENDOCRIN? OR HORMON?)
L161 DISEASE?)	QUE	(DISRUPT? OR MIMIC? OR MODULAT? OR DISORDER? OR
L162	QUE	(L160(5A) L161)
L163	QUE	(DAPHNI? OR CERIODAPHNI? OR HYALELLA? OR ASSELLUS)
L164	QUE	(L113-L124) OR L163
L165 CHARA)	QUE	(PHYTOPLANKTON? OR AUFWUCH# OR LEMNA? OR ARALES OR
L166	QUE	(L126-L129) OR (L130-L133) OR L165
L167	QUE	(NEOMYS OR MICROTINAE?)

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L168	QUE	(L150-L159)	OR	L167
L169	QUE	(LOACH? OR STICKLEBACK? OR MUMMICHOG# OR TILAPIA? OR ASELLUS)		
L170	QUE	L164	OR	L169
L171	QUE	L125	OR	L170
L172	QUE	(L1-L48)		
L173	QUE	(L171 OR L172 OR L94 OR L105)		TOTAL PROFILE

Table Appendix 2.4-2: Details of Databases Searched and Justification for Selection

Provider	Database	Justification	Limits applied	Number*
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None	46
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		1
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		0
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		0
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		0
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.		2

Provider	Database	Justification	Limits applied	Number*
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		1
	HCAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		42
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		0
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		0
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		1
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly		35
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		0

Provider	Database	Justification	Limits applied	Number*
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (searches 1-5 only).		0
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		1
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		0

\* Total number of summary records retrieved after removing duplicates, number in parenthesis is number in Search 4

**Table Appendix 2.4-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
<b>A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.4-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
<b>A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.5-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
<b>A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>	

\* Total number of summary records or full-text documents retrieved after removing duplicates

## Appendix 2.5 Environmental Fate

**Table Appendix 2.5-1: Detailed Search Parameters for Fate and behaviour in the environment (CA 7.1.1 to 7.5)**

Search Strategy	
Chemical Names:	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -hydroxy-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\pm$ )-	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ R) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, ( $\alpha$ S) (CA Index Name)	
1H-1,2,4-Triazole-1-propanoic acid, $\alpha$ -amino-, (S)-	
1H-1,2,4-Triazole-1-propionic acid, $\alpha$ -amino-, L- (8CI)	
1H-1,2,4-Triazole-1-acetic acid (CA Index Name)	
1,2,4-Triazol-1-ylacetic acid	
1,2,4-Triazole-1-acetic acid	
1H-1,2,4-Triazol-1-ylacetic acid	
2-(1,2,4-Triazol-1-yl) acetic acid	
2-(1H-1,2,4-Triazol-1-yl) acetic acid	
1H-1,2,4-Triazole (CA Index Name)	
s-Triazole (8CI)	
3,4-Diazapyrrole	
4H-1,2,4-Triazole	
Trade Names and Company codes:	
No relevant trade names	
Plus	
L1	QUE (FATE# OR DEGRAD? OR PERSIST? OR DECOMP? OR DECAY?)
L2	QUE (TRANSFORM? OR DETERIORAT? OR METAB? OR DEGENERAT?)
L3	QUE (BIODEGRAD? OR BIOTRANSFORM? OR BIODETERIORAT?)
L4	QUE (BIODEGENERAT? OR BREAKDOWN? OR BREAKSDOWN?)
L5	QUE (((BROKEN? OR BREAK?)(W)(UP OR DOWN)) OR HALFLIFE#)
L6	QUE (HALFLIVES OR HALF(W)(LIFE OR LIVES) OR DEGRDN# OR DECOMP#)
L7	QUE (BIODEGRDN# OR DEGN# OR BIODEGN# OR DISSIP? OR RESIDUE?)
L8	QUE (LEACH? OR TRANSPORT? OR MOBIL? OR MOVEMENT? OR HYDROLY?)
L9	QUE (ADSORP? OR ADSORB? OR SORP? OR SORB? OR DESORP?)
L10	QUE (DESORB? OR RUNOFF OR (RUN#(W)OFF) OR DRAIN? OR PERCOLAT?)
L11	QUE (WASHOFF? OR WASHOUT? OR (WASH?(W)(OUT OR OFF)))
L12	QUE (((OFF(W)TARGET) OR LATERAL OR HORIZONTAL)(3W)MOVE?)
L13	QUE (PHOTOLY? OR PHOTODEGRAD? OR PHOTODECOMP?)
L14	QUE (PHOTOTRANSFORM? OR PHOTOSTAB? OR PHOTODEGRDN# OR PHOTODEGN#)
L15	QUE ((PHOTO(W)DECOMP? OR DEGRAD? OR TRANSFORM? OR STAB? OR CHEM?))
L16	QUE (PHOTOCHEM? OR VOLATIL? OR VAPOUR? OR VAPOR? OR DT50 OR DT90)
L17	QUE ((DT(W)50) OR (DT(W)90) OR KDOC OR (K(W)DOC) OR KD OR KOC)
L18	QUE ((K(W)OC) OR (PARTITION?(3W)COEFF?) OR FREUNDLICH)
L19	QUE (SEDIMENT? OR SOIL OR SOILS OR PODZOL? OR CLAY? OR SAND?)
L20	QUE (SILT? OR CHERNOZEM? OR PODSOL? OR LOAM? OR PEAT?)
L21	QUE ((ORGANIC(2W)MATTER?) OR MONTMORIL? OR LATOSOL? OR HUMIC?)
L22	QUE (HUMUS? OR SUBSOIL? OR AIR OR WATER? OR ATMOSPHER?)
L23	QUE (RAIN### OR RAINWATER? OR RAINFALL? OR LEACH?)
L24	QUE (GROUNDWATER? OR ENVIRONMENT? OR PRECIPITAT? OR POND#)
L25	QUE (STREAM# OR RIVER# OR DELTA# OR ESTUAR? OR SEDIMENT?)

**Search Strategy**

L26 QUE (AQUATIC? OR MARINE? OR TIDAL? OR BENTHIC? OR LAKE#)  
L27 QUE (BENTHOS? OR LIMNO? OR FRESHWATER? OR SEAWATER?)  
L28 QUE (SALTWATER? OR ((GROUND? OR FRESH OR SEA OR SALT)(W)WATER?))  
L29 QUE (LACUSTRINE? OR MIRE OR MIRES OR RESERVOIR# OR CANAL#)  
L30 QUE (LOCH# OR SEA OR OCEAN OR OCEANS OR LAGOON? OR SEAS)  
L31 QUE (SEABED OR SEAFLOOR OR INTERTIDAL? OR SHORE? OR COAST?)  
L32 QUE (BRACKISH OR LITTORAL? OR SEASHORE? OR MEIOBENTH?)  
L33 QUE (MICROBENTH? OR MACROBENTH? OR HARBOUR# OR FLUVIAL?)  
L34 QUE (MARSH? OR BOG OR BOGS OR SWAMP? OR FEN OR FENS OR ALLUVI?)  
L35 QUE (MUDFLAT? OR (MUD(W)FLAT?) OR BAY OR BAYS OR CREEK#)  
L36 QUE (HYDROSOIL# OR (HYDRO(W)SOIL#) OR MESOCOSM? OR MICROCOSM?)  
L37 QUE (WETLAND? OR FENLAND? OR ((WET OR FEN)(W)LAND?))  
L38 QUE (WATERWAY? OR WATERSHED? OR (WATER(W)(WAY? OR SHED?)))  
L39 QUE (CATCHMENT? OR DITCH? OR DRAIN# OR DRAINAG?)  
L40 QUE (((FOLIAGE OR FOLIAR OR LEAF OR LEAVES)(5A)EVAPORAT? ) )  
L41 QUE ((SPRAY? OR DUST?)(3A)DRIFT)  
L42 QUE (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR L8 OR L9 OR L10  
OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR L17 OR L18 OR L19  
OR L20 OR L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28  
OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37  
OR L38 OR L39 OR L40 OR L41)

**Table Appendix 2.5-2: Details of Databases Searched and Justification for Selection**

Provider	Database	Justification	Limits applied	Number*
Host STN	MEDLINE	Contains information on every area of medicine providing comprehensive coverage from 1948 to present. Sources include journals and chapters in books or symposia. The database is updated 5 times each week with an annual reload and therefore stays very current in its cover.	None	186 (1)
	EMBASE	The database, covers worldwide literature in the biomedical and pharmaceutical fields, including biological science, biochemistry, human medicine, forensic science, pediatrics, pharmacy, pharmacology and drug therapy, pharmacoeconomics, psychiatry, public health, biomedical engineering and instrumentation, and environmental science. Sources include more than 4,000 journals from approximately 70 countries, monographs, conference proceedings, dissertations, and reports. The databases covers data from 1974-present and is updated daily.		55 (0)
	EMBAL	The database provides early access to bibliographic data and the abstracts for references that will appear in EMBASE. Bibliographic information for references is available in EMBAL for the latest 8 weeks of EMBASE data. The database covers the worldwide literature on the biomedical and pharmaceutical fields. Bibliographic information, abstracts, and author keywords are searchable. Sources include over 4,000 journals. The database covers current data and is updated daily. (Searches 1-5 only)		0 (0)
	ESBIOBASE	A database providing comprehensive coverage of the entire spectrum of biological research worldwide. Coverage includes the following areas: applied microbiology, biotechnology, cancer research, cell & developmental biology, clinical chemistry, ecological & environmental sciences, endocrinology, genetics, immunology, infectious diseases, metabolism, molecular biology, neuroscience, plant and crop science, protein biochemistry, and toxicology. Records are selected from over 1,700 international scientific journals, books, and conference proceedings. The database covers the period 1994 - present and is updated weekly.		0 (0)
	AGRICOLA	A bibliographic database containing selected worldwide literature of agriculture and related fields. Coverage of the database includes agricultural economics and rural sociology, agricultural production, animal sciences, chemistry, entomology, food and human nutrition, forestry, natural resources, pesticides, plant science, soils and fertilizers, and water resources. Also covered are related areas such as biology and biotechnology, botany, ecology, and natural history. The database draws on bibliographies, serial articles, book chapters, monographs, computer files, serials, maps, audiovisuals, and reports. It covers the period 1970-present and is updated monthly.		1 (0)
	BIOSIS	A large and comprehensive worldwide life science database covers original research reports, reviews, and selected U.S. patents in biological and biomedical areas, with subject coverage ranging from aerospace biology to zoology. Sources include periodicals, journals, conference proceedings, reviews, reports, patents, and short communications. Nearly 6,000 life source journals, 1,500 international meetings as well as review articles, books, and monographs are reviewed for inclusion. It covers the period 1926 – present and is updated weekly.		19 (0)
	CABA	Covers worldwide literature from all areas of agriculture and related sciences including biotechnology, forestry, and veterinary medicine. Sources include journals, books, reports, published theses, conference proceedings, and patents. It covers the period 1973-present and is updated weekly.		16 (3)

Provider	Database	Justification	Limits applied	Number*
	CAPLUS	Covers worldwide literature from all areas of chemistry, biochemistry, chemical engineering, and related sciences including applied, macromolecular, organic, physical, inorganic, and analytical chemistry. Current sources include over 8,000 journals, patents, technical reports, books, conference proceedings, dissertations, product reviews, bibliographic items, book reviews, and meeting abstracts. Electronic-only journals and Web preprints are also covered. Cited references are included for journals, conference proceedings and basic patents from the U.S., EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Also provides early access to the bibliographic information, abstracts and CAS Registry Numbers for documents in the process of being indexed by CAS. Covers the period 1907 – present and is updated daily		734 (11)
	FSTA	The database provides worldwide coverage of all scientific and technological aspects of the processing and manufacture of human food products including basic food sciences, biotechnology, hygiene and toxicology, engineering, packaging, and all individual foods and food products. Sources include more than 2,200 journals, books, reviews, conference proceedings, patents, standards, and legislation. It covers the period 1969 – present and is updated weekly.		0 (0)
	FROSTI	The database contains citations to the worldwide literature on food science and technology including food and beverages, analytical methods, quality control, manufacturing, microbiology, food processing, health and nutrition, recipes, and additives. Sources include approximately 800 scientific and technical journals, bulletins, technical reports, conference proceedings, grey literature, and British, European (EP), U.S., Japanese, and international (PCT) patent applications. Covers the period 1972 – present and is updated twice weekly. (Searches 1-5 only)		0 (0)
	GEOREF	Covers international literature on geology and geosciences. Sources include the Bibliography of North American Geology, Bibliography and Index of Geology Exclusive of North America, Geophysical Abstracts, Bibliography of Fossil Vertebrates, selected records from Geoline and from geology sections of PASCAL and state and national geological surveys. Covers the period 1669 – present and is updated twice a month.		0 (0)
	TOXCENTER	Covers the pharmacological, biochemical, physiological, and toxicological effects of drugs and other chemicals. It is composed of the following subfiles: BIOSIS, CAplus, IPA and MEDLINE and sources include abstracts, books and book chapters, bulletins, conference proceedings, journal articles, letters, meetings, monographs, notes, papers, patents, presentations, research and project summaries, reviews, technical reports, theses, translations, unpublished material, web reprints. Covers the period 1907 – present and is updated weekly		0 (1)
	PQSCITECH	Is a huge resource in all areas of science and technology from engineering to lifescience. The file is a merge of 25 STN databases formerly known as CSA databases (Cambridge Scientific Abstracts): AEROSPACE, ALUMINIUM, ANTE, AQUALINE, AQUASCI, BIOENG, CERAB, CIVILENG, COMPUAB, CONFSCI, COPPERLIT, CORROSION, ELCOM, EMA, ENVIROENG, HEALSAFE, LIFESCI, LISA, MATBUS, MECHENG, METADEX, OCEAN, POLLUAB, SOLIDSTATE, and WATER. Sources are journals, patents, books, reports, and conference proceedings spanning the period 1962 – present and it is updated monthly.		2 (2)

Provider	Database	Justification	Limits applied	Number*
	PASCAL	The database provides access to the world's scientific and technical literature including physics and chemistry, life sciences (biology, medicine, and psychology), applied sciences and technology, earth sciences, and information sciences. French and European literature is particularly well represented. Approximately 5,000 journal titles are indexed. References to theses and to conference proceedings are also included. Spans the period 1977 to present and is updated weekly (searches 1-5 only).		9 (0)
	SCISEARCH	Is an international index to the literature covering virtually every subject area within the broad fields of science, technology, and biomedicine. SciSearch contains all the records published in Science Citation Index Expanded™ and additional records from the Current Contents series of publications. Bibliographic information and cited references from over 5,600 scientific, technical, and medical journals are contained in the database. Spans the period 1974 to present and is updated weekly.		63 (3)
	ANABST	Covers worldwide literature on analytical chemistry. The ANABSTR file contains bibliographic records with abstracts (since 1984) for documents reported in printed Analytical Abstracts. Sources for ANABSTR include journals, books, conference proceedings, reports, and standards. Spans the period 1980 to present and is updated weekly.		2 (1)

\* Total number of summary records retrieved after removing duplicates in Search 1, number in parenthesis is number in Search 4

**Table Appendix 2.5-3: Detailed Search Parameters for Web searches**

Website name and service publisher	URL	Justification	Search terms	Limits applied	Number*
<b>A web search has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.5-4: Detailed Search Parameters for Journal Table of Contents**

Journal name	Journal URL or publisher	Dates, volumes and issues searched	Method of searching	Search terms	Number*
<b>A search for journal table of contents has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>					

\* Total number of summary records or full-text documents retrieved after removing duplicates

**Table Appendix 2.5-5: Detailed Search Parameters for Reference Lists**

Bibliographic details of documents whose reference lists were scanned	Number*
<b>A search for reference lists has not been conducted as the database search reported above is considered to provide an adequately comprehensive search of the quality peer reviewed literature.</b>	

\* Total number of summary records or full-text documents retrieved after removing duplicates