

Answer to the general question on food safety about radionuclide contamination of agricultural produce after the Fukushima Daiichi Nuclear Power Plant Accident in Japan

Question

Is the agricultural production from Fukushima safe for human consumption?

Answer

Yes, all the Japanese agricultural produce and foods including those produced in Fukushima and distributed to the market are safe for human consumption.

Immediately after the accident at Fukushima Daiichi Nuclear Power Plant of Tokyo Electric Power Company on 11 March 2011, the Government of Japan, namely, the Ministry of Health, Labour and Welfare (MHLW), and Ministry of Agriculture, Forestry and Fisheries (MAFF), developed the measures to ensure sufficient supply of safe food and feed to people living in Japan, and implemented them. These measures include sampling plans and methods, provisional regulation values, and those for prevention and reduction of radionuclide contamination at agricultural production sites. In order to prevent seafood contaminated by the radionuclides from entering the food chain, the fishermen's cooperatives in Fukushima decided after the accident to stop all the activities of coastal fishing and trawlnet fishing off the coast of Fukushima Prefecture for 15 months. Commercial fishing can be resumed only for fish species whose samples have continued to demonstrate significantly lower levels of radioactive cesium than the maximum level.

MHLW established the provisional regulation values for radioactive cesium and iodine on 17 March 2011, and then the maximum levels for radioactive cesium (on a basis of intervention exemption level of 1 mSv/year, the contamination rate of 50% and covering other radionuclides) on 1 April 2012 to replace the provisional values. The maximum levels for radioactive cesium in foods are 10 Bq/kg for drinking water, 50 Bq/kg for milk 100 Bq/kg for general foods, and 50 Bq/kg for infant formula. Based on these values, distribution of the food is restricted when violation (exceeding maximum levels) is found in this food in various locations of a city/town/village. The guideline for sampling and analysis was last revised on 23 March 2020. It should be noted that these values of maximum levels are lower than Codex guideline levels or regulation in the European Union and the United States of America. For radioactive cesium in general foods, Codex guideline level is 1000 Bq/kg, and maximum permitted levels in EU and USA are 1250 Bq/kg and 1200 Bq/kg, respectively.

MAFF took measures for reduction of the radionuclide contamination of foods and feeds by regulating materials used for production of foods and feeds, and decontamination of crops and farm soils. For example, MAFF developed 1) provisional tolerance values for radioactive cesium in feed; 2) reference values for radioactive cesium in materials used for cultivation of edible fungi; and 3) provisional tolerance values for radioactive cesium in feed fertilizers, soil conditioners, and nursery soils. In collaboration with the relevant local governments, MAFF instructed and assisted farmers to introduce radioactive cesium management measures based on monitoring results, such as: removal of rough bark of fruit trees to reduce the transfer of radioactive cesium from rough bark to fruits; and deep plunking or collar pruning of tea trees to prevent transfer of radioactive cesium from leaves and branch to new leaves. MAFF also

recommended to apply potassium-containing fertilizers (up to suitable application levels) to cultivation areas to control incorporation of radioactive cesium by crops from soil.

Since April 2012, non-compliance cases have been hardly detected in food commodities available for cultivation/feed management, i.e. vegetables, fruits, rice, other grains, legumes and pulses, meat, eggs, fresh milk, tea, cultivated edible fungi, etc. According to the results of monitoring before distribution to the market, violation rates (rates exceeding maximum levels) are decreasing and extremely low. For example, in FY2019 (from April 2019 to March 2020), the rate was less than 0.001%, only 2 samples out of tested 210,491 samples. These 2 samples were cultivated *Pteridium aquilinum*, very minor food in Japan, and products from the same farmland were not distributed to the market.

In addition to the monitoring requested by the national government, all results by voluntary monitoring of all the volume of rice in every single rice bag in Fukushima prefecture have been enough below maximum level of 100 Bq/kg since production year of 2015 (approximately 10 million all rice bags have been tested every year from 2012 to 2019). As the concentration of radio cesium have been extremely low level for these years, i.e. more than 99.99% samples are below detection limit or 25 Bq/kg, sample inspection has been conducted since production year of 2020.

At this moment, foods exceeding maximum levels are limited to commodities taken from wildlife that are difficult for cultivation/feed management, i.e. wild edible fungi wild plants, game meat, and fisheries products at area where the distribution is already restricted. In FY 2019, the violation ratio of these wild foods monitored before distribution to the market was only 0.98 %, i.e. 157 of tested 16,080 samples. As the distribution of these wild foods have been restricted by regions, prefecture/city/town/village, these commodities are neither distributed to the domestic market nor exported.

Furthermore, dietary exposure (effective dose) to radioactive cesium in foods are estimated by MHLW every year in Japan. The estimated dietary exposure is decreasing constantly and now around 0.1% of international intervention exemption level in Codex guideline 1 mSv/year which is consistent with recommendation of International Commission on Radiological Protection (ICRP). Radiation exposure of 1 mSv/year is corresponding to radiation exposure by approximately 16 procedures of chest X-ray examination (chest radiography). According to the report in 2008 by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), world average radiation exposure from natural environment is about 2.4 mSv/year.

https://www.unscear.org/docs/publications/2019/UNSCEAR_2019_Report.pdf

https://www.unscear.org/unscear/en/publications/2008_1.html

UNSCEAR 2008, Report Vol. 1 SOURCES OF IONIZING RADIATION, Annex B: Exposures of the public and workers from various sources of radiation, Table 12 Public exposure to natural radiation

Considering above points, additional radiation exposure 0.1% of 1 mSv/year, i.e. 0.001 mSv/year by radioactive nuclides in foods, is much lower than radiation exposure by single procedure of chest X-ray examination, and it is quite safe for human life.

The joint FAO/IAEA Division has evaluated that Japan's measures and response against radionuclide contamination in food are appropriate and that the food supply chain is controlled effectively. Japan continues to make utmost efforts for prompt and accurate information sharing regarding this issue. Also, Japan intends to respond to this issue in close cooperation with the relevant international organizations.

Please check the following MAFF website for more information.

https://www.maff.go.jp/e/policies/food_safety/index.html

https://www.maff.go.jp/e/export/pdf/sps_gen_2007.pdf

MHLW also provides information on food safety response to the Great East Japan Earthquake.

<https://www.mhlw.go.jp/english/topics/2011eq/index.html>

Fukushima Prefectural government also provides detail information on food safety.

<https://www.pref.fukushima.lg.jp/site/portal-english/list381.html>