

**JOINT FAO/WHO FOOD STANDARDS PROGRAMME  
CODEX COMMITTEE ON CONTAMINANTS IN FOODS**

16<sup>th</sup> Session

18-21 April 2023 (physical plenary meeting)

26 April 2023 (virtual report adoption)

**MATTERS OF INTEREST ARISING FROM OTHER INTERNATIONAL ORGANIZATIONS**

(Prepared by the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture<sup>1</sup>)

1. The Food and Agriculture Organization of the United Nations (FAO) and the International Atomic Energy Agency (IAEA), through the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture (the Joint FAO/IAEA Centre), support and implement activities related to food safety, quality and control systems. The activities of the Joint FAO/IAEA Centre are therefore closely related to the standards of the Codex Alimentarius Commission and its committees, including the Codex Committee on Contaminants in Foods (CCCF). In relation to food and food trade, the Joint FAO/IAEA Centre assists Member Countries of both FAO and IAEA in the peaceful application of nuclear techniques and related technologies through its Food Safety and Control Section and its associated laboratory.
2. Joint FAO/IAEA Centre activities of interest to the CCCF include the analysis and control of various chemical residues and contaminants in food; food authenticity and provenance; food related radiation safety standards; food irradiation and activities concerning food and agriculture and nuclear emergency preparedness and response. Activities also include conducting applied research and providing laboratory support and training primarily through the Food Safety and Control Laboratory, which is one of the FAO/IAEA Agriculture and Biotechnology Laboratories in Seibersdorf, Austria. Programmatic activities involve collecting, analysing and disseminating information for the effective transfer of skills and technology related to the nuclear sciences in food and agriculture. The Joint FAO/IAEA Centre also provides technical support for national, regional and interregional development work through technical cooperation projects.

**Radionuclides in Food in Non-Emergency Situations**

3. At its 14th meeting the CCCF asked to be kept informed of developments in the field of naturally occurring and human-made radionuclides in food, especially work undertaken as a collaboration between FAO, IAEA, and the World Health Organization (WHO) to provide information and practical guidance for assessing and therefore controlling internal radiation exposures in existing exposure situations (i.e., in normal circumstances, not in a nuclear or radiological emergency). Since then, criteria and methods with which to assess radionuclides in food have been developed and published. In addition, recommendations on how to manage exposure to ionising radiation from radionuclides in food in non-emergency situations have also been produced and published.
4. The FAO, IAEA and WHO have cosponsored the production of two documents, available as IAEA publications:
  - Safety Report No. 114 entitled 'Exposure due to Radionuclides in Food Other Than During a Nuclear or Radiological Emergency. Part 1: Technical Material' is currently available online<sup>2</sup> as a preprint. It provides technical information that may be used to support national policies and strategies on the evaluation of radiation doses from natural and human-made radionuclides present in foods in non-emergency situations. This joint FAO, IAEA and WHO report discusses the sources of radionuclides in foods, reviews the different ways of estimating dietary intakes of radionuclides using food consumption data and different dietary sampling methods, it makes an analysis of dietary radiation exposure studies and pathways by reviewing literature reports and includes sections on radionuclides in mineral waters, in aquaculture and in foods collected from the wild. Safety Report 114 also includes a statistical analysis of measurements of natural radionuclides in food, with tabulated results giving new data on the observed world-wide distribution of concentrations of key natural radionuclides that predominate in various foods.

<sup>1</sup> <https://www.iaea.org/topics/food-and-agriculture>

<sup>2</sup> [inis.iaea.org/collection/NCLCollectionStore/\\_Public/53/004/53004342.pdf](https://inis.iaea.org/collection/NCLCollectionStore/_Public/53/004/53004342.pdf)

- A companion publication (Part 2) is already published<sup>3</sup> as IAEA TECDOC-2011, also co-sponsored by FAO, IAEA and WHO. It builds on the information in Safety Report No. 114 to put forward approaches that can be used by regulatory bodies, policy makers, interested parties and others with responsibilities in relation to the management of food in various circumstances where radionuclides are, or could be, present, excluding any nuclear or radiological emergency, i.e., it supports the implementation of Requirement 51 of the International Basic Safety Standards related to exposure due to radionuclides in commodities<sup>4</sup>.
5. Therefore, Safety Report No. 114 and IAEA-TECDOC-2011 provides the scientific and technical foundation for implementing Requirement 51, as it relates to the management of exposures due to radionuclides in food. These two documents provide consistent approaches for managing natural and human-made radionuclides in food and drinking water in existing exposure situations. They are consistent with the WHO Guidelines for Drinking-water Quality<sup>5</sup> and the Guideline Levels for Radionuclides in foods contained in the Codex General Standard for Contaminants and Toxins in Food and Feed<sup>6</sup>.
  6. At its 14 meeting the CCCF also welcomed the offer of an informative document for the food safety regulatory community, providing the state of the art of natural radioactivity in food, feed, and water, thereby also reflecting regional variations. To follow up:
    - The Joint FAO/IAEA Centre has collaborated with colleagues in FAO, IAEA and WHO to develop a draft informative document. Comments were also provided by the United Nations Scientific Committee on the Effects of Atomic Radiation as its 2000 and 2008 reports are extensively referenced in the text.
    - CCCF14 asked for this informative document to provide information on regional variations in the presence of naturally occurring radionuclides. Unfortunately, detailed statistical analysis of activity concentration datasets did not indicate regional variations different to world-wide distributions (Section 5, pre-print Safety Report No. 114). Statistical analysis by region or country did not yield useful outputs. It is possible that insufficient data are available at present to discern regional variations in activity concentrations of natural radionuclides from the world-wide variations that we have helped characterize in Safety Report No. 114.
    - With the assistance of the Secretariat, the draft informative document was recently circulated to Codex Members so that they may offer their comments should they wish to provide feedback.

#### **Technical Cooperation and Capacity Building**

7. The Joint FAO/IAEA Centre provides technical support to a number of projects funded through the IAEA Department for Technical Cooperation. In the area of food safety and control eighty-five IAEA technical cooperation projects were supported in 2022 (seventy-three national and twelve regional projects). Further details on these capacity building projects can be found online, including a full listing<sup>7</sup>. Several of these projects are coming to an end in 2023, but forty-five new project designs are being developed for the 2024–25 biennium.

#### **Coordinated Research Initiatives**

8. In 2022, eight international coordinated research projects (CRPs) were implemented by the Joint FAO/IAEA Centre in the field of food safety and control. Each CRP involves up to twenty institutions from developed and developing countries that collaborate on research topics of common interest, for a period of five years. The CRPs of most relevance to the CCCF are CRP D52041 on “Integrated Radiometric and Complementary Techniques for Mixed Contaminants and Residues in Foods” and CRP D52044 on “Nuclear techniques to support risk assessment of biotoxins and pathogen detection in food and related matrices”.

<sup>3</sup> FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, WORLD HEALTH ORGANIZATION., Exposure due to Radionuclides in Food other than During a Nuclear or Radiological Emergency Part 2: Considerations in Implementing Requirement 51 of IAEA General Safety Requirements Part 3 (International Basic Safety Standards), IAEA-TECDOC-2011, IAEA, Vienna (2022), <https://www-pub.iaea.org/MTCD/Publications/PDF/TE-2011web.pdf>

<sup>4</sup> [www-pub.iaea.org/MTCD/Publications/PDF/Pub1578\\_web-57265295.pdf](https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1578_web-57265295.pdf)

<sup>5</sup> WORLD HEALTH ORGANIZATION, Guidelines for Drinking-water Quality — fourth edition incorporating the first and second addenda, WHO, Geneva (2022).

<sup>6</sup> JOINT FAO/WHO FOOD STANDARDS PROGRAMME, CODEX ALIMENTARIUS COMMISSION, Codex General Standard for Contaminants in Food and Feed, Radionuclides, CXS 193-1995.

<sup>7</sup> Food Safety and Control Newsletter Vol. 02 No. 1, Jan 2023 <https://www-pub.iaea.org/MTCD/Publications/PDF/Newsletters/fsc-2-1.pdf>

9. CRP D52041 involves research and regulatory institutions in Benin, Botswana, China, Colombia, Ecuador, Italy, Netherlands, Nicaragua, North Macedonia, Pakistan, Papua New Guinea, Peru, Spain, South Africa, Uganda, and the USA. Research is developing multi-class analytical methods to support systematic programmes for detecting and controlling residues and contaminants. More than thirteen methods have been developed, validated, and are being used to test for multiple veterinary and pesticide residues as well as mycotoxins in a range of animal and plant-based food commodities. The fourth and final coordination meeting of the project is scheduled for 8–12 May 2023 at the IAEA headquarters in Vienna, Austria.
10. The first research coordination meeting of CRP D52044 on nuclear techniques to support risk assessment of biotoxins and pathogen detection in food and related matrices was held in August 2022. This new five-year CRP has a “One Health” perspective and focuses on nuclear, isotopic and related techniques, and the generation of data on biotoxins such as cyanotoxins in fresh/inland water and associated food matrices along the food chain. It also involves work on biomarkers of these toxins; some targeted mycotoxins; toxins from pathogens; and pathogens of zoonotic and nonzoonotic nature associated or potentially associated with outbreaks of illness.

#### **Networking and Providing Information**

11. The Joint FAO/IAEA Centre participates at the Codex Alimentarius Commission, as well as various Codex committees, including the CCCF. The Joint FAO/IAEA Centre is committed to assisting Member Countries in providing data to the Codex Alimentarius Commission and helping develop Codex standards, codes of practices and guidelines. As part of our efforts to enhance food safety and control capacities, we promote sustainable networks to foster sharing of laboratory technical knowledge, experiences, and resources, including analytical methods and protocols for testing foods for contaminants as well as the collection of necessary data. These regional networks include the African Food Safety Network (AFoSaN)<sup>8</sup>, the Latin American and Caribbean Analytical Network (RALACA)<sup>9</sup> and the Food Safety Asia Network<sup>10</sup>. More than 200 institutes from approximately 90 countries are currently involved in these Joint FAO/IAEA Centre inspired networks.
12. An example of how these networks can amplify technical cooperation is a recent event organized to strengthen AFoSaN. An African Food Safety Workshop was organized by the Joint FAO/IAEA Centre in partnership with the National Metrology Institute of South Africa (NMISA) and hosted in Johannesburg, South Africa, 27 June – 1 July 2022. More than 280 participants from 43 countries participated and addressed a wide range of food topics on food safety, including food contaminants. The event included 46 oral presentations and 77 posters, all relevant to recent developments on the continent, including the launch of an African Food Safety Strategy (2022-2036) the goal of which is to contribute to improved public health, food and nutrition security, sustainable livelihoods, and economic growth, and the African Union’s Sanitary and Phytosanitary Policy Framework.
13. The Joint FAO/IAEA Centre continues to address FAO and IAEA Member Countries’ requests for assistance with analytical methods, standard operating procedures, and technical advice. The analytical methods developed or adapted and validated in the Food Safety and Control Laboratory and collaborating institutions are made available to Member Countries through various mechanisms such as training courses, workshops, outreach events, conferences and symposia, and publications (articles in the scientific journals, technical documents, and books). Due to restrictions to limit the spread of COVID-19, the delivery of many of our activities over the past few years has been through online/internet events. More face-to-face meetings are now taking place, but online events are also continuing to be used as a cost-effective way of delivering training to a broad audience.
14. Since the last CCCF meeting in 2022, the Food Safety and Control Section of the Joint FAO/IAEA Centre has implemented two virtual training courses on analytical methods to detect and control organic residues and contaminants in food (June 2021 and 18 May 2022). Using the internet enabled 156 participants from more than 25 countries to participate. The internet was also used as a platform to deliver training on establishing and implementing monitoring programmes for veterinary drug residues from late 22 February to early April 2022. This included over 100 food safety specialists and senior managers from 24 countries in Africa.
15. In the reporting period, the Food Safety and Control Section of the Joint FAO/IAEA Centre produced 14 publications in peer reviewed journals, 3 technical documents (TECDOCS), as well as 22 analytical method protocols and 24 standard operating procedures for technology transfer. In addition, the Food Contaminant and Residue Information System (FCRIS)<sup>11</sup> has been maintained and updated and now contains more than 260 methods. The FCRIS is a free-to-access resource that we maintain to provide useful and informative data on food contaminants and residues. It includes a database of analytical detection methods for contaminants and residues in foods.

<sup>8</sup> <http://www.africanfoodsafetynetwork.org/>

<sup>9</sup> <http://red-ralaca.net>

<sup>10</sup> <http://www.foodsafetyasia.org>

<sup>11</sup> <https://nucleus.iaea.org/sites/fcris>

### Nuclear Emergency Preparedness and Response

16. Under the Joint Radiation Emergency Management Plan of the International Organizations, the Joint FAO/IAEA Centre is the FAO focal point and assigns liaison officers to the IAEA Incident and Emergency Centre to ensure coordination with, and the dissemination of information between FAO and the IAEA. In November 2022 the FAO and IAEA signed practical arrangements to formalise the process for this inter-organization collaboration in nuclear emergency preparedness and response activities.
17. In February this year the IAEA hosted a technical meeting of experts to review draft texts for two closely related proposed safety guides: the revision of “*Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Safety Standards Series, No. GSG-2)*” (DS527) and “*Protection Strategy for a Nuclear or Radiological Emergency*” (DS534).
  - It is intended that the revised safety guide DS527 will include appendices that give in one document all the Operational Intervention Levels (OILs) including those that relate to restrictions on milk, food, and water (i.e., OIL3, OIL5, OIL6 and OIL7). The objective of the revised document is to up-date and present a coherent set of criteria for supporting decision making regarding the implementation of protective actions and other emergency response actions with an emphasis on operational criteria, such as the OILs (e.g., when measurements exceed an OIL it gives an indication that restrictions should be implemented, including on food production, sale, distribution and trade to prevent contaminated food from entering the supply chain).
  - The draft document DS534 aims to provide guidance and recommendations on the development, justification, and optimization as well as implementation of a protection strategy for a nuclear or radiological emergency. Despite the availability of existing emergency preparedness and response safety standards and technical guidance addressing the topic of a protection strategy, feedback from Member States indicates that comprehensive guidance on the topic applicable to all emergency phases is required at the Safety Standards level. Therefore, a new IAEA Safety Guide will focus on the concept of a protection strategy, its development, justification, and optimization, as per Requirement 5 in IAEA Safety Standards Series No. GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency. The new safety guide will be based on the Emergency Preparedness and Response Series Publication entitled “*Considerations in the Development of a Protection Strategy for a Nuclear or Radiological Emergency*”<sup>12</sup> that was published by the IAEA in April 2021 (as was mentioned in the report to the previous meeting of the CCCF).

### Nuclear Safety and Security in Ukraine

18. The current conflict in Ukraine has increased the risk of an incident at a nuclear power plant, which could affect agricultural production in Ukraine and possibly further afield, with the potential for radionuclide contamination of foods. Since 24 February 2022, the IAEA Director General has been providing updates on nuclear safety and security implications of the conflict in Ukraine as a result of the Russian Federation’s military operation. Statements and related resources are available online<sup>13</sup> and are up-dated regularly. In addition, the IAEA recently issued a report on Nuclear Safety, Security and Safeguards in Ukraine<sup>14</sup>, covering the period between February 2022 and February 2023. The fifty-two-page report provides an overview of the situation and the IAEA’s activities to reduce the likelihood of a nuclear power plant accident during the armed conflict.

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<sup>12</sup> [https://www-pub.iaea.org/MTCD/Publications/PDF/EPR-Protection\\_Strategy\\_web.pdf](https://www-pub.iaea.org/MTCD/Publications/PDF/EPR-Protection_Strategy_web.pdf)

<sup>13</sup> <https://www.iaea.org/nuclear-safety-and-security-in-ukraine>

<sup>14</sup> <https://www.iaea.org/sites/default/files/23/02/nuclear-safety-security-and-safeguards-in-ukraine-feb-2023.pdf>