CODEX ALIMENTARIUS COMMISSION

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Food and Agriculture Organization of the United Nations

World Health Organization

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Agenda Item 4 **CX/CF 22/15/4**

April 2022

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

14th Session
(virtual)
9-13 and 24 May 2022

MATTERS OF INTEREST ARISING FROM OTHER INTERNATIONAL ORGANIZATIONS

(Prepared by the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture[1])

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 (formerly known as Food and Environmental Protection).

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 and Drinking Water in Existing Exposure Situations

3. At its 14th meeting (CCCF14) the Committee asked to be kept informed of any development in the field of naturally occurring and artificially produced radioactivity, in particular on the FAO/IAEA/WHO work to develop methodologies that could be used to produce criteria with which to assess radionuclides in food in existing exposure situations (i.e., in normal circumstances, not in a nuclear or radiological emergency). The CCCF14 also welcomed the offer of IAEA to elaborate, with the collaboration of the FAO and the World Health Organization (WHO), 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.

4. As regards developments in the field of naturally occurring and artificially produced radioactivity:

   - A pre-print Safety Report No.114 entitled 'Exposure due to Radionuclides in Food Other Than During a Nuclear or Radiological Emergency. Part 1: Technical Material' was published online[2] in January 2022 and will appear in print later this year. It provides technical information that can be used as a basis to assess and, if necessary, manage exposure to radionuclides in food in existing exposure situations. This Joint FAO, IAEA and WHO report includes information on the observed distributions of concentrations of key natural radionuclides in various foods, the use of dietary surveys to assess ingestion doses arising from exposure to radionuclides in food, and radionuclide concentrations in natural mineral waters, aquaculture and wild foods.

1 www.iaea.org/topics/food-and-agriculture

2 inis.iaea.org/collection/NCLCollectionStore/_Public/53/004/53004342.pdf

- A companion publication (Part 2) builds on the information in Safety Report 114. It outlines proposals for the management of exposures to radionuclides in food based on the technical information provided in the Safety Report (Part 1), i.e., supporting the implementation of Requirement 51 of the International Basic Safety Standards related to radiation safety[3]. This Part 2 document is in the final stages of being edited as a joint publication of the FAO, IAEA and WHO in the IAEA TECDOC series. The TECDOC will supplement Safety Report 114 and together these two publications in conjunction with the WHO Guidelines for Drinking-water Quality[4] and the Guideline Levels for Radionuclides in foods contained in the Codex General Standard for Contaminants and Toxins in Food and Feed (CXS 195-1993)[5] will give a scientific and technical foundation for implementing Requirement 51, as it relates to the management of radionuclides in food with approaches consistent with those used for the management of radionuclides in drinking-water.

5. As regards an FAO, IAEA and WHO informative document for the food safety regulatory community:

- 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 the Safety Report No.114.
- With the assistance of the Secretariat, the draft informative document will be circulated to Codex Members so that they may offer their comments should they wish to provide feedback.

Technical Cooperation and Capacity Building

6. 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 there are currently 97 IAEA technical cooperation projects (86 national and 11 regional projects). Further details on these capacity building projects can be found online, including a full listing[6]. At least ten of these projects are coming to an end, but the above total includes 29 new national and three new regional projects that commenced this year at the start of the new IAEA programme and budget biennium.

Coordinated Research Initiatives

7. The Joint FAO/IAEA Centre is currently implementing eight coordinated research projects in the field of food safety and control. The coordinated research projects of most relevance to CCCF is entitled 'Integrated Radiometric and Complementary Techniques for Mixed Contaminants and Residues in Foods'. Under this project several multi-class analytical methods have been developed for measuring contaminants and residues in a range of food commodities. The research work is ending later this year and has directly involved institutions in Benin, Botswana, China, Colombia, Ecuador, Nicaragua, North Macedonia, Pakistan, Papua New Guinea, Peru and Uganda. In addition, institutes in Italy, the Netherlands, South Africa, Spain and the USA are collaborating with the project participants. The third research coordination meeting was held online as a virtual meeting from 26-30 April 2021. Advances in the development of radio receptor assays have included characterisation of newly developed receptors and new methods in relation to enhanced affinities of multi-contaminants for their respective receptors; standardised methods for multi-contaminants analysis (e.g. for tetracyclines, aflatoxin M1, chloramphenicol and gentamicin in milk). Research also probed the suitability of multi-contaminant screening that includes the detection of aflatoxins B1, B2 and chloramphenicol. Research participants have also developed, optimized, and validated various isotopic LC-MS/MS methods for measuring concentrations of different veterinary drug residues, organophosphate pesticides and mycotoxins in milk, urine, and meat.

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3 www-pub.iaea.org/MTCD/Publications/PDF/Pub1578_web-57265295.pdf

4 WORLD HEALTH ORGANIZATION, Guidelines for Drinking-water Quality — fourth edition incorporating the first addendum, WHO, Geneva (2017).

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

6 www-pub.iaea.org/MTCD/Publications/PDF/Newsletters/fep-25-1.pdf

Networking and Providing Information

8. In addition to the CCCF, the Joint FAO/IAEA Centre participates in, or provides input to, the Codex Alimentarius Commission, the Codex Committee on Pesticide Residues, the Codex Committee on Residues of Veterinary Drugs in Foods, the Codex Committee on Food Import and Export Inspection and Certification Systems, the Codex Committee on Methods of Analysis and Sampling, and the Codex *ad Hoc* Task Force on Antimicrobial Resistance. 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 efforts to enhance food safety capacity development through promoting networking in Africa, the Joint Centre in partnership with the National Metrology Institute of South Africa is organizing an African food safety workshop[7] and an associated technical meeting[8] in Johannesburg South Africa, 27 June – 1 July 2022. The CCCF members are invited to participate.

9. 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). The delivery of many of our activities was through internet and online events over the past two years because of restrictions aimed at preventing the spread of Coronavirus (COVID-19). Since the last CCCF meeting in 2021, the Food Safety and Control Section of the Joint FAO/IAEA Centre has published a Manual of Standard Operating Procedures for Selected Chemical Residue and Contaminant Analysis[9] In addition, 18 new and four revised analytical method protocols and standard operating procedures have been published, 19 webinars and eLearning courses have been delivered and 17 articles were published in peer reviewed journals. Also, the Food Contaminant and Residue Information System[10] has been maintained and updated and now contains 239 methods. Its database is a free-to-access resource that we maintain to provide useful and informative data on food contaminants and residues. The Food Contaminant and Residue Information System also includes a database of analytical detection methods for contaminants and residues in foods.

Nuclear Emergency Preparedness and Response

10. In October 2021, an international emergency exercise at level 3, the highest level for IAEA exercises, was hosted by the United Arab Emirates. This exercise included participants from the IAEA, 75 member countries and 12 international organizations, including the FAO and the WHO. The exercise scenario simulated a significant airborne release of radioactive material at the Barakah nuclear power plant. Level 3 Convention Exercises are held every three to five years to test arrangements specified under the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. The Joint FAO/IAEA Centre was involved at the IAEA Incident and Emergency Centre as part of its role to ensure coordination and dissemination of information between the FAO and the IAEA. Although food and agricultural production was not severely affected in this exercise simulation, call out procedures were rehearsed, and communications were tested with colleagues in the FAO and the IAEA. Part of this exercise involved an international assistance mission, with national and international experts working in collaboration with the United Arab Emirates to provide real time radiation monitoring data. At the close of the exercise, the IAEA expressed its gratitude to the United Arab Emirates, and to the hundreds of representatives from the many participating organizations that contributed to the success of this exercise.

11. An Emergency Preparedness and Response Series Publication entitled 'Considerations in the Development of a Protection Strategy for a Nuclear or Radiological Emergency'[11] was published by the IAEA in April 2021. The publication includes comprehensive information on the development, justification, and optimization of a protection strategy for a nuclear or radiological emergency as well as on the application of the strategy during an emergency. It provides detailed guidance on a variety of protective actions to be implemented as standalone measures or in combination with other measures, for example, protective actions such as restrictions on the production, collection and trade of food, milk and drinking-water. This publication was produced to provide practical guidance on the implementation of Requirement 5 of the IAEA Safety Standards Series No. GSR Part 7 'Preparedness and Response for a Nuclear or Radiological Emergency'[12] that was published by the IAEA in 2015 and cosponsored by several international organizations, including the FAO and the WHO.

7 www.afsw2022.co.za
8 www.iaea.org/events/evt1905225
9 www.fao.org/publications/card/en/c/CB6191EN/
10 nucleus.iaea.org/fcris
11 www-pub.iaea.org/MTCD/Publications/PDF/EPR-Protection_Strategy_web.pdf
12 www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Nuclear Safety and Security in Ukraine

11. 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[13] and are up-dated regularly.

[13] https://www.iaea.org/nuclear-safety-and-security-in-ukraine