

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

10th Session

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MATTERS OF INTEREST ARISING FROM OTHER INTERNATIONAL ORGANIZATIONS

ACTIVITIES OF THE JOINT FAO/IAEA DIVISION OF NUCLEAR TECHNIQUES

IN FOOD AND AGRICULTURE RELEVANT TO CODEX WORK¹

(Prepared by the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture)

1. The Joint Food and Agriculture Organization of the United Nations (FAO) and International Atomic Energy Agency (IAEA) Division of Nuclear Techniques in Food and Agriculture (the “Joint Division”) supports and implements specific activities related to the Codex Alimentarius and the work of the Codex Committee on Contaminants in Foods (CCCF) through its Food and Environmental Protection Section and the FAO/IAEA Agriculture and Biotechnology Laboratories. These include activities related to the analysis and control of various chemical residues and food contaminants; food traceability and authenticity; radiation standards related to food; preparedness and response to nuclear and radiological emergencies affecting food and agriculture; and food irradiation. Member States are supported through technical cooperation and coordinated research projects as well as additional extrabudgetary projects, interregional workshops and research and technology adaptation and transfer initiatives.

Radionuclides in Food and Drinking Water and Guideline Levels in CODEX STAN 193-1995

2. The IAEA, FAO and the World Health Organization (WHO) have completed an IAEA Technical Document (TECDOC), cosponsored by the FAO, entitled *Criteria for Radionuclide Activity Concentrations for Food and Drinking Water*. The TECDOC is currently being prepared for publication by the IAEA and will be circulated once published. This document stems from a Technical Meeting, attended by 45 experts from 37 Member States plus representatives from the FAO and WHO, that was held at the IAEA’s Headquarters in Vienna, Austria, from 8 to 12 September 2014. The meeting’s purpose was to provide guidance and technical input to the TECDOC and to discuss radiological criteria, including radionuclide activity concentrations, used as the basis for the control of foodstuffs and drinking water in existing exposure situations (i.e. not following a radiological or nuclear emergency). The radionuclide guideline levels in the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995) were included in these discussions. An equivalent approach to that used to calculate the Codex guideline levels was agreed on as an appropriate framework for calculating radionuclide reference levels (Bq/kg) for radioactivity in food in ‘normal’ circumstances or well after an emergency has been declared to have ended should residual quantities of radionuclides be present in food and the environment. The TECDOC will therefore encourage countries to develop national radionuclide reference levels for existing exposure situations that, where appropriate, are consistent with the Codex guideline levels for radionuclides in food traded internationally.

¹ Document prepared by and under the responsibility of the Joint FAO/IAEA Division on Nuclear Techniques in Food and Agriculture, IAEA Headquarters, Vienna, Austria. Please see details at: <http://www.naweb.iaea.org/nafa/index.html>

3. The TECDOC aims to provide an authoritative introduction to and explanation of different international standards relating to radionuclides in food and drinking water², including the circumstances in which such standards are intended to be used, and focuses on 'existing exposure situations'. It emphasizes that 1 mSv/year is the appropriate dose criterion for food and drinking water because this is specified in the new International Basic Safety Standards contained in IAEA Safety Standards Series No. GSR Part 3 in relation to existing exposure situations. The document will include a framework to help countries develop activity concentration levels for use as radionuclide reference levels at the national level, which are consistent with 1 mSv/year dose criteria for an existing exposure situation. For completeness, the TECDOC also summarizes current international standards for radionuclides in food, milk and drinking water in emergency exposure situations issued by the IAEA in joint sponsorship with the FAO and WHO³. The TECDOC will be circulated to the CCCF delegations as soon as it is published by the IAEA.

Food Safety and Quality Workshops (Czech Republic, Viet Nam and Senegal)

4. The Joint Division organized a number of workshops relevant to the CCCF, including workshops in the Czech Republic⁴, Viet Nam⁵ and Senegal.
5. Staff members from the FAO/IAEA Agriculture and Biotechnology Laboratories (ABL) provided training and education on food safety issues at workshops in the Czech Republic and Viet Nam for more than 120 scientists and regulators from over 30 countries.
6. The workshop in Prague, the Czech Republic, which was held in conjunction with the Seventh International Symposium on Recent Advances in Food Analysis and was attended by over 70 participants, addressed various challenges in planning and implementing effective food control systems. It also offered an opportunity for scientists from developing and developed countries to initiate and expand collaborative efforts to address the issue of contaminants in foods.
7. In Viet Nam, staff members from the ABL organized a two-week workshop on food safety, quality and traceability that was attended by 50 participants from 11 Member States in the Asia and the Pacific and the Middle East regions. It focused on the protection of the integrity of the food supply chain as a holistic process involving multiple stakeholders. The workshop was held in collaboration with the Global Food Safety Partnership and the United Nations Industrial Development Organization.
8. An FAO–IAEA Training Workshop on Food Safety, Quality and Traceability was organized by the Food and Environmental Protection Section of the Joint Division and the Laboratory for Control of Veterinary Drugs of the Inter-State School of Veterinary Sciences and Medicine, Senegal. The purpose of the workshop was to contribute towards ongoing efforts to promote interaction and networking among food safety stakeholders in Africa. Topics included laboratory quality control and mechanisms to trace foods and food related hazards. The participants included 30 scientists, laboratory personnel and food inspectors from 18 African countries, namely, Benin, Botswana, Burkina Faso, Burundi, Côte d'Ivoire, Gabon, Ghana, Guinea, Kenya, Lesotho, Malawi, Morocco, Nigeria, Rwanda, Senegal (the host), the Sudan, Togo and Zambia.

Group Training on Food Safety in the Sudan for African Laboratory Personnel

9. A group training event on the basic troubleshooting of analytical tools used in food and environmental safety laboratories was held at the Department of Radioisotopes, Centre of Veterinary Research, in Khartoum, Sudan, from 2 to 6 August 2015. This was attended by 17 non-local participants from 14 African countries and 9 local laboratory staff and young graduates. They benefited from theoretical and practical training on the use of analytical tools, including liquid scintillation counting and liquid and gas chromatography. The application of radiotracer techniques to chemical hazard/residue analysis was also discussed in addition to common challenges in food and environmental safety laboratories. Participating countries included Botswana, Burkina Faso, Cameroon, Chad, Egypt, Ethiopia, Mauritius, Nigeria, South Africa, Tunisia, Uganda, the United Republic of Tanzania and Zimbabwe, as well as the Sudan as the host country.

² See: http://www.who.int/water_sanitation_health/publications/dwq_guidelines/en/

³ See: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1467_web.pdf

⁴ See: <http://www-naweb.iaea.org/na/news-na/na-food-safety-training.html>

⁵ See: <http://www-naweb.iaea.org/na/news-na/na-food-safety-training.html>

Technical Workshop on the Remediation of Radioactive Contamination in Agriculture, IAEA Headquarters, Vienna, Austria, 17–18 October 2016

10. The National Agriculture and Food Research Organization of Japan and the Joint Division are initiating a joint project to hold a Technical Workshop on the Remediation of Radioactive Contamination in Agriculture. This will comprise a two-day meeting at the IAEA's Headquarters in Vienna, Austria, and is planned for 17 and 18 October 2016. The workshop will serve to improve understanding of radioactive contamination in agriculture among authorities and organizations responsible for food and agriculture, and therefore facilitate their future policy development and research planning. There have been only a few major nuclear accidents that have affected agricultural production in the long term. However, the year 2016 marks the fifth anniversary of the accident at the Fukushima Daiichi nuclear power plant (NPP) and the 30th anniversary of the accident at the Chernobyl NPP. Both were classified as major accidents at Level 7, the highest on the IAEA's International Nuclear and Radiological Event Scale. A broad understanding in this area will greatly improve emergency preparedness related to food and agricultural production in all countries. It would also support efforts to re-establish agricultural trade in food products from areas currently affected by contamination from these accidents. There is therefore a need to promote and share knowledge and experience related to the remediation of radioactive contamination in agriculture.

Cadmium in Cocoa

11. The Joint Division also participated in the electronic working group on maximum levels for cadmium in chocolate and cocoa products.⁶

Coordinated Research Projects

12. The Joint Division continues to provide support to FAO and IAEA Member States for the implementation of holistic food safety and control systems through coordinated research activities. Some relevant current international coordinated research projects include:
- “Development and Strengthening of Radioanalytical and Complementary Techniques to Control Residues of Veterinary Drugs and Related Chemicals in Aquaculture Products” (2015–2020).
 - “Implementation of Nuclear Techniques to Improve Food Traceability” (2011–2016).
 - “Accessible Technologies for the Verification of Origin of Dairy Products as an Example Control System to Enhance Global Trade and Food Safety” (2013–2018).
 - “Response to Nuclear Emergencies Affecting Food and Agriculture” (2014–2019). (This project aims to develop/assess innovative systems for data collection and management as well as geovisualization platforms that can be used both in routine monitoring and for emergency response to nuclear and radiological incidents affecting food and agriculture.)

Technical Cooperation Projects

13. The Joint Division continues to provide technical assistance to national, regional and interregional capacity building projects for food contaminant control and food traceability to help ensure that a safe food supply is in place and that relevant trade is enhanced. For ease of reference, those IAEA technical cooperation projects most relevant to the work of the CCCF are listed in Table 1. These projects and other activities of the Joint Division help Member States to implement Codex guidelines and standards.

Building Laboratory and Food Safety Networks

14. The Joint Division continues to promote the formation of regional laboratory/food safety networks, for example the Latin American and Caribbean Analytical Network (RALACA)⁷ and the African Food Safety Network (AFoSaN)⁸. These networks are growing and the participating Member States work together to share experiences and expertise in the monitoring of various food contaminants.

⁶ See: Codex Alimentarius Commission document CX/CF 15/9/83

⁷ See: <http://red-ralaca.net>

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

15. A project has also commenced to establish another food safety laboratory network in the Asia and the Pacific region. This project, entitled “Establishing a Food Safety Laboratory Network in Asia to Control Veterinary Drug Residues and Related Chemical Contaminants”, initially involves 18 countries.
16. An interregional project so far involving 32 countries has also commenced and will provide a platform for a group of Member States to jointly address food safety concerns as well as opportunities to share relevant experiences and resources. Activities in the project will include collecting and sharing exposure data relevant to Codex committees such as the CCCF. The project’s first coordination meeting will be held in Santiago de Chile, from 18 to 22 April 2016.

Collaborating Centres: Environmental Pollution Research Centre (Costa Rica)⁹

17. Under the IAEA’s Collaborating Centre scheme, eligible Member State institutions are designated as partners to facilitate the implementation of selected programmatic activities. In 2015, the Joint Division oversaw the re-designation of Costa Rica’s Environmental Pollution Research Centre (CICA) as an IAEA Collaborating Centre for e-Learning and Accelerated Capacity Building for Food and Environmental Protection. CICA was originally designated as an IAEA Collaborating Centre in 2006. The four-year work plan, which extends to 2018, will further enhance the activities of the ABL by providing local expertise and coverage of topics relevant to the CCCF.

⁹ See: <http://cica.ucr.ac.cr/>

Table 1. IAEA Technical Cooperation Projects Relevant to the CCCF's Work

Number	Region/Country	Project No.	Title
1	Africa	RAF/5/067	Establishing a Food Safety Network through the Application of Nuclear and Related Technologies
2	Africa	RAF/5/078	Establishing a Food Safety Network through the Application of Nuclear and Related Technologies, Phase II
3	Asia and the Pacific	RAS/5/057	Implementing Best Practices of Food Irradiation for Sanitary and Phytosanitary Purposes
4	Asia and the Pacific	RAS/5/062	Building Technological Capacity for Food Traceability and Food Safety Control Systems through the Use of Nuclear Analytical Techniques
5	Asia and the Pacific	RAS/5/078	Enhancing Food Safety Laboratory Capabilities and Establishing a Network in Asia to Control Veterinary Drug Residues and Related Chemical Contaminants
6	Latin America and the Caribbean	RLA/7/019	Developing Indicators to Determine the Effect of Pesticides, Heavy Metals and Emerging Contaminants on Continental Aquatic Ecosystems Important to Agriculture and Agroindustry (ARCAL CXXXIX)
7	Latin America and the Caribbean	RLA/5/069	Improving Pollution Management of Persistent Organic Pollutants to Reduce the Impact on People and the Environment (ARCAL CXLII)
8	Interregional	INT/5/154	Improving Food Safety through the Creation of an Interregional Network that Produces Reliable Scientific Data Using Nuclear and Isotopic Techniques
9	Asia	RAS2014031	Monitoring of Cereals and Pulses Yield Sustainability under Radionuclide Contaminated Biosphere (Nuclear Power Plant Disaster)
10	Azerbaijan	AZB/5/001	Establishing a Spectrometry Laboratory at the State Metrology Service under the State Committee for Standardization, Metrology and Patents
11	Bahrain	BAH/5/001	Determining Pesticide and Mycotoxin Residues in Water and Food
12	Belize	BZE/5/007	Supporting Sustainable Capacity Building through Distance Learning for Laboratory Personnel of the National Agricultural Health Authority
13	Benin	BEN/5/009	Monitoring Safe Food Supply through Total Diet Studies and the Application of Nuclear and Complementary Analytical Techniques

Number	Region/Country	Project No.	Title
14	Botswana	BOT/5/014	Enhancing the Use of Nuclear and Isotopic Analytical Techniques in Monitoring Chemical Food Contaminants
15	Central African Republic	CAF/5/007	Enhancing Laboratory Capacity to Control Chemical and Bacteriological Hazards in Foodstuffs of Animal Origin
16	China	CPR/5/022	Implementing the Stable Isotope Technique for High Quality Agro-product Traceability and Authenticity
17	China	CPR/5/023	Strengthening the Regulatory System for the Effective Control of Food Irradiation and Promoting Good Manufacturing Practices
18	Dominica	DMI/5/001	Enhancing Capacity to Monitor Agrochemical Residues in Foods and the Environment
19	Ecuador	ECU/5/027	Improving Food Security and Environmental Sustainability by Monitoring Wetlands as Indicators of Good Agricultural Practice in Palm Oil Production
20	Ecuador	ECU/5/028	Consolidating Food Security and Environmental Sustainability in Palm Oil Production Using Nuclear Applications
21	Egypt	EGY/5/026	Establishing a National Reference Laboratory Applying Nuclear/Isotopic and Related Techniques in the Analysis of Food Contaminants
22	El Salvador	ELS/7/006	Building Capacities to Minimize Environmental Contamination and to Protect the Health of the Rural Population by Strengthening Research Capabilities and Laboratory Infrastructure
23	Guatemala	GUA/7/004	Developing Capabilities to Evaluate the Transfer and Fate of Water Pollutants to Improve the Management of Major Basins and the Safety of Agricultural Products
24	Iraq	IRQ/5/021	Developing Food Safety and Assurance System Using Nuclear and Other Related Technologies
25	Mauritania	MAU/5/005	Strengthening of Laboratory Capacity to Monitor Natural, Chemical and Microbial Food Contaminants
26	Mauritius	MAR/5/024	Building Capacity to Analyse Veterinary Drug Residues and Related Chemical Contaminants in Animal Products
27	Mongolia	MON/5/019	Enhancing Analytical Equipment for Animal Disease Prevention, Diagnosis and Surveillance
28	Mozambique	MOZ/5/006	Building Laboratory Capacity for Food Safety Using Nuclear/Isotopic and Complementary Analytical Techniques

Number	Region/Country	Project No.	Title
29	Namibia	NAM/5/013	Assessing the Spatial Distribution of Lead, Cadmium and Selected Pesticide Residues in Livestock Farming
30	Niger	NER/5/020	Building Capacity at the Central Laboratory (LABOCEL), Niamey, for Control of Food Products of Animal Origin
31	Nigeria	NIR/5/039	Enhancing Dietary Exposure Assessment of Chemicals in Food
32	Oman	OMA/5/003	Strengthening National Capabilities in Food Safety and Food Traceability
33	Panama	PAN/5/022	Determining Pesticides and Inorganic Pollutants in Vegetables and Studying the Adsorption and Migration through Nuclear Technologies in Zones of High Pollution Incidents to Guarantee Safe Food for Consumers
34	Paraguay	PAR/5/010	Strengthening the National Network of Laboratories Involved in Chemical Risk Analysis to Ensure Food Safety through the Use of Nuclear and Complementary Non-Nuclear Techniques
35	Qatar	QAT/5/004 and QAT/5/005	Upgrading the Central Food Laboratory; Upgrading the Central Food Laboratory Phase II
36	Sierra Leone	SIL/5/016	Strengthening Laboratory Capabilities to Evaluate and Monitor Levels of Mycotoxins, Toxic Metals and Related Contaminants in Foods
37	Uganda	UGA/5/039	Enhancing the Monitoring of Veterinary Drug Residues, Related Chemicals and Natural Food Contaminants
38	Uruguay	URU/5/029	Implementing a System for Traceability and Authenticity to Ensure Food Safety of Cheeses and Wines
39	Zambia	ZAM/5/030	Establishing a National Mycotoxins Monitoring Programme