



## JOINT FAO/WHO FOOD STANDARDS PROGRAMME

### CODEx COMMITTEE ON PESTICIDE RESIDUES

Fifty-sixth Session

Santiago, Chile

8-13 September 2025

### MATTERS ARISING FROM OTHER INTERNATIONAL ORGANIZATIONS

#### ACTIVITIES OF THE JOINT FAO/IAEA CENTRE OF NUCLEAR TECHNIQUES IN FOOD AND AGRICULTURE RELEVANT TO CCPR WORK

(Prepared by the Joint FAO/IAEA Centre<sup>1</sup>)

1. The Food and Agriculture Organization of the United Nations (FAO) and International Atomic Energy Agency (IAEA), through the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture (Joint FAO/IAEA Centre), support and implement activities relevant to the Codex Committee on Pesticide Residues (CCPR). Last year marked the 60<sup>th</sup> anniversary of the Centre. The Centre continues to render services to member countries of both organizations through mechanisms such as technical cooperation projects (TCPs), coordinated research projects, extra-budgetary projects and laboratory-led applied research and technology adaptation, to promote food safety, consumer protection and facilitate trade. This goal is achieved, in collaboration with sister FAO Divisions in Rome and the regions, through the Food Safety and Control Section and its laboratory, the Food Safety and Control Laboratory (FSCL), located in Seibersdorf, Austria.
2. In 2024 and 2025, member countries of the two organizations sought assistance from the Joint FAO/IAEA Centre on the use of nuclear and isotopic analytical techniques to test and monitor pesticide residues and related hazards in food. Past and current activities relevant to CCPR and those of future relevance are highlighted below.

#### TECHNICAL COOPERATION PROJECTS, CAPACITY BUILDING, NETWORKS, DATA GENERATION, MEETING

3. The Joint FAO/IAEA Centre currently provides technical support to more than 80 IAEA technical cooperation projects (TCPs) in food safety and control<sup>2</sup> (see *Table 1 for selected active TCPs*). At least 500 food safety scientists received relevant training in 2024.
4. **Networking:** The Joint FAO/IAEA Centre continues to support and promote regional food safety networks as one of the means to enhance capacity building. These include the Latin American and Caribbean Analytical Network (RALACA)<sup>3</sup>, the African Food Safety Network (AFoSaN)<sup>4</sup> and a food safety network in Asia<sup>5</sup>. These networks provide a platform for sharing knowledge and experiences and carry out a wide range of activities, including transfer of analytical methods, proficiency testing, interlaboratory comparisons and benchmarking. More than 200 institutes from approximately 90 countries are currently involved in the networks. The networks will continue to benefit from a number of capacity building projects some of which are listed in Table 1 below.

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

<sup>2</sup> Additional information is available in the FAO/IAEA Newsletter:

<https://www.iaea.org/publications/15798/food-safety-and-control-newsletter-vol-03-no-2-july-2024>

<sup>3</sup> See: <http://red-ralaca.net>

<sup>4</sup> See: <http://www.africanfoodsafetynetwork.org/>

<sup>5</sup> See: <http://www.foodsafetyasia.org/>

5. To further enhance AFoSaN, an African food safety workshop was organized on 7-11 October 2024 in Marrakech, Morocco in cooperation with Office National de Sécurité Sanitaire des produits Alimentaires (ONSSA). 150 participants from 32 African countries as well as the US Department of Agriculture, Foreign Agricultural Services; US Food and Drug Administration; the African Union (AU); CABI Agriculture (formerly Commonwealth Agricultural Bureaux); instrument vendors including Analytik Jena, SCIEX; Promalab; and Analytik Jena partner attended the workshop. The FAO country representative and representatives of the World Food Programme (WFP) also participated. This is a biennial event organised to enhance knowledge, information exchange; build regional expertise, and contribute to addressing pertinent regional and global food safety and trade issues while identifying future work. The themes included, though were not limited to: Food safety awareness; systems and partnership development, Resource mobilisation; Standards in Africa, Accreditation, Pesticide residues testing and monitoring; as well as Research and Capacity Building Opportunities. The next event is expected to take place in Cote D'Ivoire in the last week of June - first week of July 2026.
6. **Supporting analytical laboratories:** The Joint FAO/IAEA Centre continues to meet requests from member countries for analytical methods, standard operating procedures and technical guidance. The methods developed or adapted and validated in the FSCL and collaborating institutions are made available to member countries through various mechanisms, including training workshops, publications in the scientific literature and public outreach events, as well as the platform, 'Food Contaminant and Residue Information System'.<sup>6</sup> The database contains analytical methods and associated material to support the control of contaminants and residues in foods.
7. **Laboratory work on pesticide residues analysis and technology transfer:** The Food Safety and Control Laboratory (FSCL) of the Joint FAO/IAEA Centre in Seibersdorf, Austria, collaborates with development partners to enhance food safety practices through R&D, capacity building and technology transfer. The FSCL developed and validated a multiresidue analytical method using supercritical fluid chromatography coupled with mass spectrometry (SFC-MS/MS) for detecting pesticides (Acetamiprid, Alachlor, Atrazine, Azinphos-ethyl, Azinphos-methyl, Azoxystrobin, Boscalid, Carbaryl, Carbendazim, Chlorpyrifos, Chlorpyrifos-methyl, Deltamethrin, Diazinon, Dichlorvos, Dimethoate, Epoxiconazole, Ethion, Fenprophtrryn, Fenthion, Fipronil, Hexythiazox, Imazalil, Imidacloprid, Malaoxon, Malathion, Methamidophos, Methidathion, Methomyl, Pendimethalin, Permethrin, Phosalone, Phosmet, Pirimicarb, Pirimiphos-methyl, Profenofos, Pyraclostrobin, Quinalphos, Tau fluvalinate, Thiacloprid, Thiamethoxam) and the mycotoxins aflatoxin (AFB1, AFB2, AFG1, AFG2) in maize and cassava. The objective of the work at FSCL was to comprehensively evaluate a multiresidue method using SFC-MS in terms of recovery, reproducibility, linearity, and matrix effect; noting that these matrices are analytically challenging due to their high content of starch, lipids, and natural interfering compounds, which can lead to substantial matrix effects when using conventional liquid chromatography mass spectrometry (LC-MS) methods.
8. The method showed excellent recovery, reproducibility, linearity, and reduced matrix interference. This robust technique is suitable for routine monitoring and regulatory compliance, particularly in regions with heightened food safety concerns for maize and cassava. An initial comparison of matrix effects between LC and SFC in millet confirmed that SFC produces significantly lower matrix effects than LC. This demonstrates that SFC is a more effective chromatographic technique for the analysis of complex food matrices such as millet, maize, and cassava. Recovery experiments performed at 10 and 50 ppb showed that most compounds fell within the acceptable recovery range of 70–120% across all matrices studied. Precision, evaluated through relative standard deviations (RSDs), was excellent. Almost all compounds exhibited RSDs below 20%, with a particularly high proportion showing RSDs between 0–10%, especially in millet and maize, indicating robust reproducibility. Matrix effects were evaluated for all matrices, and despite their complexity, only a small percentage of compounds showed strong matrix effects: 10% in millet, 5% in maize, and 15% in cassava. This further highlights the suitability of SFC for minimizing matrix interferences in challenging sample types.
9. **Supporting data-generation for maximum residue limits (MRLs) including minor species/use:** The regional project for Africa 'Enhancing Human and Analytical Capacities for Food Safety Standards' aimed at addressing a critical gap in Africa's food safety system - the need to establish or contribute to the setting of national, regional and international (Codex) standards and guidelines - is making good progress. 33 countries are involved. Work is ongoing on supervised field trials for targeted pesticides in okra and chilli pepper in view of relevant CCPR55 deliberations. Ghana, Kenya and Senegal are leading this work. Further, a regional training course on Good Laboratory Practice for Conduct of Supervised Field Trials - Minor Crops took place in Accra, Ghana on the 5-16 May 2025. 20 participants from Africa have participated. This is expected to enhance the technical skills of participating member states in producing data relevant to pesticides residues and contribute in setting of MRLs for certain pesticides in okra and chilli.

<sup>6</sup> See: <http://nucleus.iaea.org/fcris/>

10. ***Asia-Pacific regional meeting on proficiency testing scheme review and inter-laboratory collaboration and Training Course on Multiclass Food Hazard Monitoring/Surveillance, 14-23 August 2024, Xiamen, China:*** This training was hosted by the Institute of Quality Standard and Testing Technology for Agro-Products (IQSTAP) of the Chinese Academy of Agricultural Sciences (CAAS) and spread over 2 weeks. The first week (Aug 14-18) covered proficiency testing (PT) scheme review and inter-laboratory comparisons (ILCs) and involved 35 international and local participants from 19 countries, with most of them attending in-person and others joining virtually. The second week (Aug 19-23) covered multiclass food hazard monitoring/surveillance programmes and involved 38 participants from 16 member countries. Using China's experience, participants noted a number of gaps in maximum residue levels for crops and animal products including edible offal, among others.
11. ***Advanced Regional Training Course on Isotopic Confirmatory Techniques for Residues/Contaminants in Food Products, Doha, Qatar, 27-31 October 2024:*** This regional training was organized in cooperation with the Food Safety Department, Ministry of Public Health, the State of Qatar, to enhance knowledge on advanced confirmatory techniques and associated screening techniques for a range of food hazards. 37 participants from Afghanistan, Bahrain, Bangladesh, Indonesia, Iraq, Jordan, Kuwait, Lao P.D.R, Malaysia, Mongolia, Myanmar, Oman, Pakistan, Philippines, Qatar, Sri Lanka and Thailand attended the training. Confirmatory analysis of a range of pesticide residues in different foods including its application to routine, sustainable national residue monitoring was a major topic. Pesticide residue monitoring programmes and common challenges including a lack of MRLs for certain products in the region (using the Arab region as an example) were discussed. Problem examples included ethion in chili peppers which had no limits in the region nor on the Codex database, and that there are no limits for the closest commodity category for fruiting vegetables other than cucurbits. The other example is azoxystrobin in pomegranate (No direct limits, No limits under 'Assorted tropical fruits with inedible peel') but limits are available for banana, under same category. The group also discussed acetamiprid in chili peppers for which there is no direct MRL, although under fruiting vegetables category an MRL of 0.2 mg/kg exists. Participants also benefited from lectures on analytical method development and validation and held various discussions.

**Table 1. Overview of selected CCPR-relevant projects supported by the Joint FAO/IAEA Centre (in addition, more than 30 new projects are being designed for the 2026-2027 project cycle)**

Number	Country/ Region	Project No.	Title
1	Bahamas	BHA5003	Strengthening Laboratory Capacity for Testing Microbial and Related Chemical Contaminants in Food Products
2	Bangladesh	BGD5034	Enhancing Competence in Nuclear and Complementary Capabilities for Testing/Monitoring Veterinary Drug Residues and Other Contaminants in Foods
3	Barbados	BAR5001	Enhancing Capability for Food Safety and Surveillance through the Development of Nuclear, Isotopic and Complimentary Analytical Methods
4	Cameroon	CMR5028	Improving the Capacity for Food Safety Testing Using Nuclear and Complementary Techniques
5	Comoros	COI5001	Building a Food Safety Laboratory Capacity in Comoros — Phase I
6	Cote d'Ivoire	IVC5045	Strengthening National Analytical Capacities for Food Safety Testing and Assessing Micronutrient Bioavailability in Local Diets
7	Democratic Republic of the Congo	COD5013	Using Nuclear Techniques to Improve Crop Productivity for Maize, Soybeans and Beans, as well as Food Safety Testing Capabilities
8	Djibouti	DJI5001	Developing Nuclear/Isotopic and Complementary Food Safety Testing Capabilities
9	Dominica	DMI5004	Establishing a National Food Safety Monitoring Surveillance Programme
10	Ecuador	ECU5033	Strengthening Laboratory Capacities for Monitoring Residues of Neonicotinoid Pesticides in Honeybees and Honey
11	Eritrea	ERI5016	Enhancing Food Safety Analytical and Monitoring Capabilities
12	Fiji	FIJ5005	Establishing a Food Safety Laboratory for Analysis of Pesticide Residues in Fresh Fruits, Vegetables and Root Crops — Phase II
13	Fiji	FIJ5008	Improving the Capabilities of the Food Safety Laboratory for Analysis and Control of Biological Contaminants
14	Georgia	GEO5001	Enhancing National Programmes for Testing and Monitoring Food Contaminants and Residues
15	Honduras	HON5012	Strengthening Analytical Capabilities for the Detection of Residues, Contaminants and Microbiological Hazards in Food and Feed
16	Kyrgyzstan	KIG5001	Establishing Effective Testing and Systematic Monitoring of Residues and Food Contaminants and of Transboundary Animal Diseases
17	Lesotho	LES5011	Strengthening Nuclear and Related Food Safety Laboratory Capabilities to Control Veterinary Drug Residues and Related Contaminants

Number	Country/ Region	Project No.	Title
18	Marshall Islands	MHL5004	Strengthening Capacities for the Detection and Control of Contaminants and Residues in Food
19	Mauritania	MAU5011	Enhancing Intersectoral Food Safety Testing and Surveillance of Chemical and Biological Hazards
20	Mozambique	MOZ5012	Enhancing Food Safety testing and Monitoring of Hazards Using Nuclear and Related Techniques
21	Namibia	NAM5021	Enhancing National Food Safety and Aquatic Contaminant Monitoring Programmes
22	Niger	NER5026	Enhancing Food Production, Preservation, Safety and Quality
23	Papua New Guinea	PAP5005	Strengthening National Infrastructure to Control Contaminants and Other Residues in Food — Phase I
24	Pakistan	PAK5053	Strengthening and Enhancing National Capabilities for the Development of Climate Smart Crops, Improvement in Animal Productivity and Management of Soil, Water, and Nutrient Resources Using Nuclear and Related Technique
25	Palau	PWL5005	Building Core Capacities to Control Contaminants and Other Residues in Food — Phase I
26	Panama	PAN5032	Strengthening Monitoring Capabilities for Chemical Residues and Contaminants in Aquaculture using Nuclear and Isotopic Techniques
27	Qatar	QAT5009	Enhancing National Food Safety Capacity to Test and Monitor Residues/Contaminants Using Nuclear and Related Isotopic Techniques
28	Samoa	WSM5001	Building Core Laboratory Capacities to Control Chemical Contaminants and Residues in Food
29	Senegal	SEN5043	Developing Capacity to Conduct an Assessment of Exposure to Chemical Hazards in Food, and to Evaluate the Nutritional Composition of Local Dishes
30	Seychelles	SEY5014	Developing Toxicological Analytical Capability for Monitoring and Biomonitoring Exposure to Toxic Agents in Biological and Environmental, as well as Food and Water Matrices
31	South Africa	SAF5018	Establishing National Capacities for Monitoring and Control of Pesticide Residues in Agricultural Produce
32	St Lucia	STL0001	Strengthening Institutional Capacities in the Application of Nuclear Technology
33	Togo	TOG5007	Developing Laboratory Capacities for the Quality Control of Food and Pharmaceutical Products
34	Vanuatu	NHE5005	Strengthening Agro-Food Laboratory Quality Infrastructure – Phase III

Number	Country/ Region	Project No.	Title
35	Zambia	ZAM5034	Expanding the Scope of Food Safety Testing and Surveillance of Hazards in Foods and Related Matrices
36	Regional - Asia and the Pacific	RAS5096	Strengthening Multi-stakeholder Food safety Monitoring Programmes for Chemical Contaminants and Residues in Plant and Animal Products Using Nuclear/Isotopic Techniques
37	Regional - Asia and the Pacific	RAS5099	Developing Climate Smart Crop Production including Improvement and Enhancement of Crop Productivity, Soil and Irrigation Management, and Food Safety Using Nuclear Techniques (ARASIA)
38	Regional - Latin America and the Caribbean	RLA5091	Strengthening the Monitoring Programmes of Pesticide Residues and Mycotoxins in Food Through the Establishment of a Proficiency Test Programme in Official Laboratories (ARCAL CXCVC)
39	Regional - Africa	RAF5091	Enhancing Human and Analytical Capacities for Food Safety Standards (AFRA)