The Food and Agriculture Organization (FAO) of the United Nations is represented at RASSC by the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (Joint FAO/IAEA Division). This Division was established by the FAO and the International Atomic Energy Agency (IAEA) in 1964. It is a strategic partnership that continues to mobilize the talents and resources of both organizations to benefit their Member States in the peaceful application of nuclear science and technology in a safe and effective manner.

Since its formation, the joint FAO/IAEA programme of work has evolved in line with the world’s changing needs. Activities are focused in five main areas of: plant health and genetics; animal production and health; insect pest control; food and environmental protection; soil and water management and crop nutrition. These activities are underpinned by the international radiation standards of the IAEA as well as the international food safety and quality standards of the Joint FAO and WHO Codex Alimentarius Commission (Codex); the international phytosanitary standards of the FAO International Plant Protection Convention (IPPC), and; the animal welfare, health and zoonosis standards of the World Organization for Animal Health (OIE). Both FAO and IAEA through the activities of their Joint Division strive to mobilize commitment and concerted action towards meeting the Sustainable Development Goals for agriculture and food security through the appropriate development and integration of nuclear and related technologies.

**Standards for Radionuclides in Food**

Since the events in Japan in 2011 subsequent to the nuclear accident at the Fukushima Daiichi accident, there has been a great deal of interest in standards relating to radionuclides in food and agriculture. In addition to radiation safety standards and participation at RASSC, Joint FAO/IAEA Division activities are related to the international food standards of the Joint FAO/WHO Codex Alimentarius Commission. The Codex General Standard for Contaminants and Toxins in Food and Feed [CODEX STAN 193-1995] contains guideline levels for radionuclides in foods contaminated following a nuclear or radiological emergency and traded internationally. The Joint FAO/IAEA Division works with CODEX and participates at the meetings of the Codex Alimentarius Commission and of several of its committees, including the Codex Committee on Contaminants in Foods (CCCF). The CCCF has been informed and updated on RASSC activities related to food. The next CCCF meeting is in March 2017 and the Joint FAO/IAEA Division has been invited to provide a side event that will focus on radionuclides in food and highlight IAEA TECDOC 1788: *Criteria for Radionuclide Activity Concentrations for Food and Drinking Water.*

**Inter-Agency Cooperation**

In August 2016 an IAEA Regional Workshop to review and update national action plans to control public exposures was held in Jakarta, Indonesia. The Joint FAO/IAEA Division participated in order to facilitate discussions on the prioritization and key issues for regulatory and health authorities for the control of radioactivity in food (in existing exposure situations) and to assist in discussions related to Codex Standards and IAEA standards, reference levels and guidance. The meeting was attended by more than 30 participants from 17 countries (Bangladesh, Indonesia, Iran, Iraq, Jordan, Kuwait, Malaysia, Myanmar, Oman, Pakistan, Qatar, Sri Lanka, Syria, Thailand, United Arab Emirates, Viet Nam and Yemen) and three international organizations (FAO, IAEA and WHO). Discussions centred
on TECDOC 1788. The framework for calculating reference levels for radionuclides in food as set out in TECDOC 1788 was explained and discussed in detail, as where the assumptions that underpin such calculations. Guidance was provided on how to calculate National Reference Levels for radioactivity in food. Few countries appeared to have National Reference Levels for radionuclides in food that are in the form of activity concentrations. Participants were encouraged to consider adopting reference values equal in magnitude to those already in International Food Standards of the FAO/WHO Codex Alimentarius Commission for international trade. The meeting also discussed how the approach in TECDOC 1788 is consistent with Codex Guideline Levels.

Technical Workshop on Remediation of Radioactive Contamination in Agriculture

This Technical Workshop was held at the IAEA headquarters, Vienna, Austria in October 2016. The event was hosted by the Joint FAO/IAEA Division in collaboration with Japan’s National Agriculture and Food Research Organization (NARO). The workshop brought together experts from around the world in order to promote and share knowledge and experience related to remediation of radioactive contamination in agriculture. There have been 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 of which were classified as major accidents at Level 7, the highest on the International Atomic Energy Agency’s (IAEA’s) International Nuclear and Radiological Event Scale.

From an agricultural perspective, the impacts of both these major accidents are related to caesium radionuclides, specifically caesium-137, which is a relatively long-lived isotope with a half-life of some thirty years. Research and technical efforts to remediate and ameliorate the impact of this radioactivity on agricultural production aim to minimize and prevent the contamination of foods and other commodities. In doing so, they assist the social and economic recovery of affected rural communities by enabling sustainable production. However, these efforts are not widely appreciated outside of the affected areas.

An appreciation of developments in this area will greatly improve emergency preparedness related to food and agricultural production in Member States. It will also support efforts to re-establish agricultural trade from areas currently affected by residual levels of radionuclides. In recognition of the high level of interest in this technical area, the hosts have entered into a practical agreement for future collaborations, including holding similar events in future.

Radioactivity in Agriculture and a New Application

A coordinated research project of the Joint FAO/IAEA Division has developed an innovative decision support system for monitoring radioactivity during nuclear emergency affecting food and agriculture; it supports data collection and management as well as visualization and mapping. The prototype system can be accessed as an application on smartphones and is designed to link decision makers with field officers and analytical laboratories. Although the research project is entitled “Response to Nuclear Emergencies Affecting Food and Agriculture”\(^1\), a feature is that it can be used in routine monitoring, using the package to aid routine sampling will help ensure that the software and data exchange protocols continue to be maintained and developed in line with best practices and that users will not require specialist training; should they be faced with an emergency the system could be implemented at a moment’s notice.

\(^1\) http://www-naweb.iaea.org/nafa/swmn/crp/swmcn-nuclear-emergency-food.html
The project involves the European Commission and institutions in Belgium, China, France, India, Japan, Morocco, Russian Federation, Ukraine and the Former Yugoslav Republic of Macedonia. The package is being reviewed independently and tested to ensure that it meets strict internet and electronic security requirements. Following successful review, the system will be named and released online as a free package that can be adopted and utilized by member countries.

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