



Advancements and Developments in Response to Large-Scale Nuclear Emergencies Affecting Food and Agriculture

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Large-scale nuclear emergencies affect not only human health through external exposure, but also through ingestion of contaminated food. Accidental releases of radionuclides to the environment and their subsequent transfer to the food chain is a dynamic process that varies temporally and spatially across agricultural landscapes. Up-to-date information of soil, water, plants and food is necessary at each step for informed decision making in protecting the environment as well as human health. Guidance for food security authorities on managing such emergencies in “real-time”, through the efficient collection of environmental information and support decision making, can assist in an effective response process.

Since 2013, the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, through the activities of the Soil and Water Management and Crop Nutrition Laboratory (SWMCNL), has contributed in developing methodologies and IT systems to improve capabilities of food safety authorities to respond and intervene effectively for large-scale nuclear emergencies affecting food and agriculture.

Now in its final year of implementation by the SWMCNL, the FAO/IAEA funded Coordinated Research Project (CRP) D1.50.15 on ‘Response to Nuclear Emergency Affecting Food and Agriculture’, has developed two documents on collecting and measuring radioactivity in food and agriculture samples. A protocol on food product sampling during nuclear emergencies recommends approaches relevant to optimizing the sampling process, as resources for implementing radioactivity monitoring are limited but critical for swift response in large-scale incidences. Standard operating procedures for radioactivity measurement of foodstuff, including agricultural and livestock products for radiological monitoring and emergency measurements, provides practical support in rapid analysis of samples for radionuclide concentration. The methodologies were developed to be generic and non-country specific such that countries in varying stages of nuclear emergency preparedness can utilize the tools and protocols made available through this CRP. In addition, an innovative IT decision support system - Decision Support System for Nuclear Emergencies Affecting Food and Agriculture (DSS4NAFA) – has been developed to facilitate the logistical aspects of data collection, management and visualization in the response process. This system is currently in its beta testing phase. To further explain the processes involved in development of DSS4NAFA, a comprehensive guideline has been produced, outlining the considerations in building sustainable IT frameworks, and presenting development case studies of two IT systems for decision support during nuclear emergency response for food and agriculture.

This EGU contribution will highlight the main achievements and outputs of IAEA CRP D1.50.15, and also share future research initiatives in remediation of contaminated agricultural land.