

PUI PROJECT PROPOSAL ON GLOBAL NETWORKING FOR IMPROVED RADIOLOGICAL AND NUCLEAR EMERGENCY RESPONSE IN FOOD AND AGRICULTURE

Countries initially targeted: IAEA Member States in the Americas, with a view to extending the project to cover participants in Africa, Asia and Europe

Rationale

Radiological and nuclear emergencies may result in substantial amounts of radionuclides released into the environment. Subsequently, these radionuclides affect food production, contaminating an extensive variety of commodities and foodstuffs as they spread through the environment. The implementation of management options to ensure the safety of foods in case of nuclear emergencies, is based on data on radionuclide activity concentrations in soil, water, food and agricultural or aquaculture commodities. This data is necessary to provide proper remediation planning and management in agriculture in affected areas.

Appropriate and standardized monitoring equipment, sampling strategies and analytical techniques should be readily available so that they can be used as a basis for implementing countermeasures, remedial actions and other management options, depending on local geographical and soil type conditions. Existing capabilities in regard to impacts on food and agriculture in areas affected by nuclear emergencies do not always necessarily take into account these challenges concerning contamination of food producing areas related to agriculture.

To respond and manage nuclear emergencies in “real-time”, it is critical that the most up-to-date information on spatial and temporal distribution of radionuclides is available and accessible for decision-makers and end-users. In addition, information on land characteristics and land and water management practices that influence the movement of radionuclides from land to the food chain is required. This information will help to develop land, water and crop management strategies that will reduce the risk of radionuclides entering into the food chain over space and time.

The challenge is to collect, monitor and make available information through the application of efficient data collection, data management and spatial and temporal mapping of radionuclide concentrations in soil, water, plants and animals. Ensuring a comprehensive and well-managed information system is fundamental to emergency response. However, tools and specialist support systems developed for major emergency situations tend to fall out of use either because they are used infrequently in emergency exercises or they rapidly become outdated due to developments in computing and information technology. Therefore, it is important that a data management and geo-visualization platform be developed that can also be used routinely in contexts different from nuclear emergencies in food and agriculture, such as assessment of global and local climate change impact on food and agriculture, food safety (due to pesticides or heavy metals), or trans-boundary animal diseases, when there is not an emergency but where there is a need to maintain routine monitoring information and data. This ensures that the system is constantly updated and is sustainable; people are able to use it without frequently needing special training, the software is maintained and the data includes baseline information.

Project Description

Based on the unique challenges concerning contamination of food producing areas related to agriculture during radiological and nuclear emergencies, the objective of this project is to establish a global network for enhancing worldwide capabilities of authorities responsible for monitoring radionuclides in food (with focus on terrestrial food), soil, water and agriculture, both routinely and in case of a nuclear emergency. By using virtual working methods and internet applications the network will enable collaborative working, improving the effectiveness of sampling, analysis and mapping, and usage of the monitoring data for remediation planning, optimization of the monitoring strategies and training of the staff involved.

The project aims at drawing participation from national agricultural research systems, which have existing programs on nuclear emergency response in food and agriculture, with expertise and technical capacity in soil, water and food sampling for radionuclide analysis, and developing online data management and geo-visualization platforms. The different participants will set up and facilitate a global network allowing countries to follow latest developments in sampling and analytical protocols for nuclear emergency response in food and agriculture, download prototype applications for online data management and geo-visualization. Online courses and materials would be developed, in the different UN languages, supported by face-to-face training and out-reach activities.

Participants will receive guidance in formulating vision and purpose for the global network, participate in capturing needs and defining general specifications through analysis of strength and gaps of existing nuclear emergency response systems in the field of food and agriculture, feedback on previous emergency management and system features expectations. The project will provide expertise to end users for technological implementation through needs and feasibility analysis and feedback of existing operational implementation and best practices.

The culmination of these activities would be simulation exercises developed within the project, and encompassing a broad range of issues related to the implementation of modern technical developments and improvements of surveillance, measuring, mapping and monitoring radionuclides in food and other agricultural commodities. The full range of activities from recommendations on initial sampling protocols to special management options for contaminated areas will provide a harmonized basis for Member States to share information and implement monitoring programmes in relation to food produced in areas affected by radioactive contamination.

Planned Activities

1. Train competent authorities for managing data on radionuclides in food and agriculture; basics of radionuclide monitoring in food and agriculture for competent authorities, including use of monitoring data for remediation planning
2. Exchange information on sampling techniques and analytical measurements, data management and visualization, and real-time monitoring
3. Develop and expand data management and visualization strategies within target regions
4. Develop distance learning and web-based modules for training materials on monitoring of radionuclides in food and agriculture for competent authorities, including live monitoring and monitoring in areas subjected to restrictions and controls

5. Prepare guidelines on participatory monitoring of data on radionuclides in food and agriculture for food producers and consumers
6. International simulation exercises covering different aspects of nuclear emergency response in food and agriculture, focusing on four different geographic regions, i.e. Americas, Africa, Asia and Europe

Project Outcomes/Outputs

1. Improved infrastructure and support to address challenges concerning contamination of food producing areas related to agriculture during radiological and nuclear emergencies
2. An international network of regulators and experts trained
3. Capacity building organized for competent authorities in the field of sampling and analysis of radionuclides in food and agriculture, radionuclide data management and visualization
4. Design of online tools for managing and visualizing data on radionuclides in food and agriculture
5. Training material and guidelines on surveillance, sampling, monitoring and data management related to radionuclide contamination in food and agriculture and areas affected by radiological and nuclear emergencies
6. Improved capabilities in addressing contamination of food producing areas related to agriculture during radiological and nuclear emergencies

Rationale for selecting initially targeted regions:

The project will initially focus on countries in the Americas as a pilot in year 1 and will involve assistance from experts in other regions who have dealt with large scale radiological incidents. If the year 1 is successful, the project will be open to as many participating countries as can be accommodated including those from Africa, Asia and Europe. It is envisaged that the number of participating countries will expand as the project progresses. The initial selection will target countries that are active in this area as well as those that have expressed an immediate interest or indicated a pressing need through joint FAO/IAEA activities following the events in Japan in March 2011.

Budget:

Estimated budget Year 1:	80 250
Estimated budget Year 2:	321 000
Estimated budget Year 3:	<u>321 000</u>
	722 250

BUDGETARY BREAKDOWN

Year 1	
€ 55 000	Consultants/Technical meetings on initiation and planning and sampling techniques and analytical measurements
€ 20 000	Consultants to design data management and visualisation tools
€ 5 250	Programme Support Costs (7%)
€ 80 250	Year 1 sub-total
Year 2	
€ 65 000	Consultants/Technical meetings on real time monitoring, data management and optimization of participatory monitoring strategies
€ 115 000	Consultants to design data management and visualisation tools, distance learning and web based modules and guidelines and editing of project documents
€ 120 000	Training on Basics of radionuclide monitoring in food and agriculture for competent authorities, food producers and consumers
€ 21 000	Programme Support Costs (7%)
€ 321 000	Year 2 sub-total
Year 3	
€ 65 000	Consultants/Technical meetings on data management and visualisation strategies, reference levels of radionuclide concentrations in soil, water and foods and closing meeting
€ 75 000	Consultants to prepare Guidelines on management and visualization of data on radionuclides in food and agriculture and technical editing and printing of project documents
€ 160 000	Training in sampling techniques, optimisation of monitoring strategies and international simulation exercises covering different aspects of nuclear emergency response in food and agriculture.
€ 21 000	Programme Support Costs (7%)
€ 321 000	Year 3 sub-total
€ 722 250	TOTAL