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**Agenda Item 3**

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## **JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON CONTAMINANTS IN FOODS**

### **Second Session**

**The Hague, The Netherlands, 31 March – 4 April 2008**

### **MATTERS OF INTEREST ARISING FROM OTHER INTERNATIONAL INTERGOVERNMENTAL ORGANIZATIONS**

Submitted by the International Atomic Energy Agency<sup>1</sup>

### **COORDINATED RESEARCH PROJECT ON APPLICATIONS OF RADIOTRACER AND RADIOASSAY TECHNOLOGIES TO SEAFOOD SAFETY RISK ANALYSIS**

#### **Introduction**

1. The International Atomic Energy Agency (IAEA) encourages and assists the development and practical application of research on peaceful uses of atomic energy throughout the world so as to foster the exchange of scientific and technical information. IAEA coordinated research activities are designed to stimulate and coordinate the undertaking of research by scientists in IAEA Member States in selected nuclear fields. These coordinated research activities are normally implemented through Coordinated Research Projects (CRP) that join together research institutes in both developing and developed Member States to collaborate on the research topic of interest. The research that is supported encourages the acquisition and dissemination of new knowledge and technology generated through the use of nuclear technologies and isotopic techniques in the various fields of work covered by the IAEA mandate.

2. The research results, which are generated in projects lasting three to five years, are freely available to Member States and the international scientific community through their dissemination in IAEA scientific and technical publications and in other relevant international or national journals. Where it is practical and relevant, the knowledge gained through a CRP is used to enhance the quality of projects delivered to Member States through the IAEA Technical Cooperation Programme.

3. The IAEA strives to stimulate through its research activities the growth of nuclear sciences and technologies in developing countries. The projects bring together developing and developed countries to concentrate on the same research topic at the same time, and help the countries in sharing and using the knowledge and experience gained. Nuclear and isotopic techniques can often provide unique and cost effective solutions to problems, and so the research can make crucial differences to peoples in their ordinary lives, helping in areas of greatest human need and promoting the goals of sustainable development.

#### **Background**

4. Radiotracer and radioassay nuclear techniques are particularly useful for generating information on the biokinetics and food-chain transfer of metals and toxins in marine organisms, including those that are consumed as seafood. Such information could be better linked to analyses that support risk-based

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<sup>1</sup> Document prepared by and under the responsibility of IAEA

management decisions with respect to the safety assessment of commercially important seafood intended for human consumption.

5. In support of these objectives, the IAEA has initiated a Coordinated Research Project on Applications of Radiotracer and Radioassay Technologies to Seafood Safety Risk Analysis. It is envisioned that this research will lead to the potential establishment of maximum levels in seafood for those contaminants already evaluated (lead, cadmium) as well as contaminants not evaluated to date (harmful algal blooms, persistent organic pollutants and other toxins) through the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Joint FAO/WHO Codex Alimentarius Commission.

6. The CRP has brought together research laboratories with the required capabilities that, as members of wider groups, have a focus, or intention, to apply radioassay and radiotracer techniques to evaluate and generate information on the biokinetics and food-chain transfer of metals and toxins in marine organisms, especially those that are valued as seafood. Immediate benefits to individual groups include assistance from IAEA/FAO to improve laboratory competence for the specific requirements of the project and the opportunity to interact with groups working on comparable problems in different environments.

### **Objectives of the Coordinated Research Project**

7. The broad objective of the CRP is to generate data on priority contaminants in seafood organisms with regard to human consumption, sale and export, and to assess the application and relevance of these experimentally-derived and field-based data to the management of these contaminants in seafood. The results of these studies could be better linked to analyses that support risk-based management decisions with respect to the safety assessment of commercially important seafood intended for human consumption. The specific CRP objectives include the:

- Integration of current studies on applications of nuclear techniques to the study of the bioaccumulation and food-chain transfer of contaminants in seafood with risk management decisions in relation to the assessment of their suitability for human consumption and trade
- clear identification of the needs for scientific data on the bioaccumulation of priority contaminants in seafood through linkages with international standardisation bodies
- generation of data that are relevant to the management of contaminants in seafood through the application of radiotracer, radioassay and related nuclear technologies
- preparation of a list of laboratories/countries/experts in the different analytical areas (geographical and institutional representation)

### **Activities of the Coordinated Research Project**

8. A *Consultants Meeting on Applications of Radiotracer and Radioassay Technologies to Seafood Safety Risk Analysis* met at the IAEA Marine Environment Laboratories in Monaco from 25-27 September 2006 in order to further define the objectives and scope of the activities under the Coordinated Research Project. Among other decisions, the Consultants Meeting agreed on the need to select and focus on specific combinations of contaminants and seafood where international trade in these high value commodities is impeded. It was noted that this decision was based on the evidence that particular species bio-accumulate certain contaminants to very high levels. The Consultants Meeting also made the following specific recommendations on the additional activities required to meet the CRP objectives:

- The focus should be on a specific contaminant category (algal toxins or toxic metals) representative of a major seafood commodity so as to make observations and measurements with respect to:
  - harmful algal bloom paralytic shellfish poisoning toxin (PSP) and ciguatoxin
  - cadmium in oysters, scallops and cephalopods
- Data should be generated on the basis of the Global Environment Monitoring System (GEMS/FOOD)
- Research should take account of the Codex Risk Analysis Principles and Policy for Exposure Assessment of Contaminants and Toxins in Foods or Food Groups applied by the Codex Committee on Contaminants in Foods

- The research should take account of relevant ongoing studies related to the bioaccumulation of contaminants in marine organisms, including elements such as:
  - fisheries closures/re-openings
  - specific aquaculture species and the geographical location of aquaculture facilities, based on bioaccumulation characteristics of species and habitats
  - risk-based assessments of contaminants in seafood
  - bioavailability of contaminants in seafood tissues to human consumers
  - gaps in contaminant bioaccumulation knowledge

9. Subsequent to the Consultants Meeting, the *First Research Coordination Meeting (RCM) for the Coordinated Research Project on Applications of Radiotracer and Radioassay Technologies to Seafood Safety Risk Analysis* met at the IAEA Marine Environment Laboratories in Monaco from 20-23 November 2007. In taking account of the CRP objectives, as well as the further results of the Consultants Meeting, the first Research Coordination Meeting decided that more quantitative and systematic approaches were required to meet the data needs for the risk analysis process, including through the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and other expert bodies/consultations. It was agreed that this data should include information on hazard identification and characterization, exposure assessment, risk characterization and evaluation, and the implementation of various risk management options, including the possibility of further monitoring and review.

10. The Research Coordination Meeting further decided that specific research should:

- focus on cadmium in oysters, scallops and cephalopods, including natural background contamination and considering exposures related to specific edible tissues
- focus on harmful algal bloom paralytic shellfish poisoning toxin (PSP) and ciguatoxin fish poisoning (CFP), including in the application of monitoring programmes and radiotracer technologies
- apply radiotracer and radio-assay techniques and use IAEA marine reference materials for quality assurance purposes, including in the establishment of baseline data
- conduct risk assessments based on specific aquaculture and/or marine species, including the consideration of their geographical location and taking account of the bioaccumulation characteristics of different species and habitats
- conduct risk assessments on the cellular speciation and bioavailability (including in vitro) of contaminants in specific edible seafood tissues traded internationally and intended for human consumption
- conduct risk assessments through various food, sediment and water interfaces, including consideration of contaminant concentrations in these sources