Joint FAO/IAEA Programme
Nuclear Techniques in Food and Agriculture

Food & Environmental Protection Newsletter

Vol. 11, No. 2 July 2008

http://www-naweb.iaea.org/nafa/index.html
http://www.fao.org/ag/portal/index_en.html

ISSN 1020-6671

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To the Reader

Since 1964, the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture has been in a unique position to promote the mandates of both FAO, in its efforts to eliminate world hunger and poverty through sustainable agricultural development, improved nutrition and food security, and the IAEA, through peaceful uses of atomic energy to accelerate and expand the contributions of nuclear technologies to health and prosperity worldwide.

The mission of the Joint FAO/IAEA Programme on Nuclear Techniques in Food and Agriculture is to strengthen capacities for the use of nuclear methods to improve technologies for sustainable food security and to disseminate these techniques through international activities in research, training and outreach in its Member States. The Joint FAO/IAEA Programme is subdivided into four major subprogrammes on sustainable intensification of crop production systems, sustainable intensification of livestock production systems, sustainable control of major insect pests and improving food and environmental safety. The FAO/IAEA Agriculture and Biotechnology Laboratory (Seibersdorf) plays a key role in supporting the Joint FAO/IAEA Programme.

The Food and Environmental Protection Section of the Joint FAO/IAEA Division and the Agrochemicals Unit of the FAO/IAEA Agriculture and Biotechnology Laboratory implements the food and environmental safety subprogramme that provides assistance in four main areas, namely, coordinating and supporting research, providing technical and advisory services, providing laboratory support and training, and collecting, analyzing and disseminating information, primarily in areas

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related to the use of ionizing radiation, pesticide and veterinary drug residues, and radioactive contamination of foodstuffs.

Many of our subprogramme activities are undertaken in collaboration with other international bodies, such as the Joint FAO/WHO Codex Alimentarius Commission, by providing direct support in their efforts to enhance food quality and safety, protect consumers and promote trade in food and agricultural products. This assistance is primarily directed to the Codex Committee on Contaminants in Foods, the Codex Committee on Pesticide Residues and the Codex Committee on Residues of Veterinary Drugs in Foods.

In this regard, we are pleased to report that we will be attending the forthcoming 31st Session of the Codex Alimentarius Commission (Geneva, Switzerland; 30 June – 4 July 2008) to report on several activities of interest to Codex being undertaken by our subprogramme. As detailed in the enclosed Feature Article, activities of interest to Codex includes the potential consideration of research arising from our Coordinated Research Project on Applications of Radiotracer and Radioassay Technologies to Seafood Safety Risk Analysis in the potential establishment of maximum levels in seafood for those contaminants already evaluated (lead, cadmium) by the Joint FAO/WHO Expert Committee on Food Additives (JECFA), as well as contaminants not evaluated to date (harmful algal blooms, persistent organic pollutants and other toxins), through the Codex Committee on Contaminants in Foods.

The subprogramme is also significantly involved in the activities of the Codex Committee on Pesticide Residues (CCPR), especially as related to methods of analysis and sampling for pesticides, and including our chairmanship of the CCPR *ad hoc* Working Group on Methods of Analysis and Sampling. This work entails responsibilities related to the continued consideration of issues concerning the estimation of the uncertainty of results for the determination of pesticide residues in foodstuffs and for unifying the expression of pesticide residue concentrations based on milk fat or on whole milk, respectively.

We will also be informing the Codex Commission of our forthcoming Training Workshop on the Introduction to Quality Assurance/Quality Control Measures in Pesticide Residue Analytical Laboratories that will be held through our FAO/IAEA Training and Reference Centre for Food and Pesticide Control at the FAO/IAEA Agriculture and Biotechnology Laboratory in Seibersdorf, Austria, from 6-31 October 2008.

The subprogramme also continues to be actively involved in the activities of the Codex Committee on Residues of Veterinary Drugs in Foods, particularly related to the further consideration of guidelines for the design and implementation of national regulatory food safety assurance programmes associated with the use of veterinary drugs and in this regard, we all extend our warmest welcome to our new consultant, Rajendra Patel, who will undertake duties on 1 June 2008 as a food safety specialist dealing with issues related to veterinary drug residues.

In closing, we all wish to convey our heartiest congratulations to Philipp M. Klaus in undertaking his new position with our Isotope Hydrology Laboratory as well as our my best wishes for continued health and happiness to our recently retired colleagues Tatiana Rubio-Cabello and Perihan Aysal.

Sincerely,

David H. Byron

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Feature Article

Coordinated Research Project on Applications of Radiotracer and Radioassay Technologies to Seafood Safety Risk Analysis (K4.10.10)

Technical Officer: David H. Byron

Introduction

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.

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.

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

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

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.

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

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:

- 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

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.

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.

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.

The second research coordination meeting of the CRP will be hosted by the International Centre for Theoretical Physics (ICTP) in Trieste, Italy, from 8-12 December 2008.

Past Events

FAO/IAEA Training Workshop on Screening and Confirmatory Methodology for Veterinary Drug Residues; Seibersdorf, Austria; 12-30 November 2007

Technical Officer: Andrew Cannavan

In recent years, the issue of veterinary drug residues in animal-derived foods has become increasingly important in many developing countries. Concerns over veterinary drug usage and residues are primarily related to food safety, human health and the need to meet requirements for international trade. The control of veterinary drug residues is achieved through the application of good farming and animal husbandry practices. Analytical laboratories play an important role in the verification of the quality of food commodities, the provision of feedback to the competent authorities on the effectiveness of the production and residue control practices, identification of new or re-occurring residue problems, and in the provision of information services to farmers and producers, either directly or through extension services.

FAO/IAEA Training Workshop 2007: Screening and Confirmatory Methodology for Veterinary Drug Residues.

Current international guidelines and regulations require that countries intending to export foods of animal origin must have programmes in place to ensure that food products do not contain residues of banned drugs, or concentrations of legally used drugs exceeding national or international maximum residue limits, and that the laboratories certifying compliance with regulatory levels must implement appropriate quality control and quality assurance systems. In order to produce internationally acceptable results, laboratory staff must be proficient in the appropriate screening and confirmatory methodology, as well as being familiar with the principles of ISO Standard 17025. These residue control programmes are important not only with regard to international trade, but also to guarantee the safety, quality and security of national food supplies.

A screening method practical session.

To assist IAEA and FAO Member States in implementing effective control programmes for veterinary drug residues, the Joint FAO/IAEA Programme has run several training courses and workshops for analysts and regulators over the past few years. The latest of these was a training workshop on screening and confirmatory methods for veterinary drug residues, held at the FAO/IAEA Training and Reference Centre for Food and Pesticide Control at Seibersdorf, 12-30 November 2007. The objectives of the workshop were to strengthen the awareness of scientists and laboratory managers of the relevant guidelines and regulations and the theoretical and technical aspects of screening and confirmatory methods for the detection of veterinary drug residues; to introduce the quality assurance/quality control principles according to ISO Standard 17025 that are relevant to veterinary drug residue analysis, and; to discuss the various possible roles of quality assured laboratories in monitoring the effectiveness of good farming practices.

The programme comprised on site lectures and laboratory work in the following subjects:

- Codex standards, guidelines and recommended international codes of practice for the control of the use of veterinary drugs.
- Veterinary drug residue testing in the context of food safety.
- Principles of sampling.
- Laboratory accreditation, equivalency of food control procedures and mutual recognition.
- Quality assurance systems and quality assurance/quality control measures in analytical laboratories.

- Statistical treatment and interpretation of analytical results.
- Sample preparation.
- Screening techniques (microbial inhibition tests, immunoassays).
- Confirmation of results.
- Chromatographic theory and practical applications of TLC, HPLC, GC-MS, LC-MS.
- Method validation and principles of estimation of uncertainty of results.
- The role of analytical laboratories related to good farming practices.

The workshop had 22 participants from 21 developing countries. Lectures and laboratory practical sessions were led by staff of the Agrochemicals Unit and by invited guest lecturers from internationally renowned laboratories, academia, international governmental and non-governmental organisations and both the public and the private sector. All participants engaged fully in lectures, practical sessions and discussions. A half day visit was accommodated by the veterinary drug residue testing laboratories of the Austrian Health and Food Safety Agency (AGES), at which the participants had the opportunity to interact with the analysts working there, ask questions and exchange information on methods and instrumentation used for various classes of drugs.

On the final day of the workshop the participants, working in four groups, gave presentations summarising the issues important to their countries with respect to the control of veterinary drug residues, the current and future roles of their laboratories in the 'farm to fork' approach to food safety, and the most important lessons learned from the workshop. The importance of maintaining a network of laboratory contacts and collaborators in different countries was emphasised.

Feedback from the participants and external lecturers, both at the end of the workshop and through further contact with many of the participants since then, has indicated that the workshop was extremely successful. Background and training material was also provided on a workshop CD to a number of applicants from the many that were not able to be accommodated at the workshop. Feedback from those individuals has also been good, and there is already a strong demand for future similar events.

28th Meeting of the Organization for Economic Cooperation and Development (OECD) Nuclear Energy Agency (NEA) Working Party on Nuclear Emergency Matters; Paris, France; 4-5 December 2007

Technical Officer: David H. Byron

The reporting officer represented FAO at the 28th Meeting of the Organization for Economic Cooperation and Development (OECD) Nuclear Energy Agency (NEA) Working Party on Nuclear Emergency Matters, particularly in the context of preparations and response to nuclear accidents and radiological events affecting food and agriculture.

The mission of the OECD/NEA Committee on Radiation Protection and Public Health (CRPPH) Working Party on Nuclear Emergency Matters (WPNEM) is to improve nuclear emergency management systems (planning, preparedness, response, recovery) within member states in coordination with other related organizations, including FAO. Part of its work programme focuses on exploring and developing new concepts and future procedures to enhance national and international emergency preparedness and response management, including through the preparation and conduct of the International Nuclear Emergency Exercise (INEX) series.

In presenting information to the meeting, the reporting officer noted that FAO responsibilities concerning preparedness and response to nuclear emergencies affecting food and agriculture are mandated through two major international conventions, namely, the *Convention on Early Notification of a Nuclear Accident*, whereby FAO is responsible to "…. advise governments on acceptable levels of radionuclides appearing in agricultural, fisheries and forestry products entering national and international trade"; and, through the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*, whereby FAO is responsible to "…. advise governments on measures to be taken in terms of the agricultural, fisheries and forestry practices to minimize the impact of radionuclides and to develop emergency procedures for alternative agricultural practices and for decontamination of agricultural, fisheries and forestry products, soil and water".

Pursuant to the obligations placed on it by these Conventions, it was noted that the FAO regularly participates in the IAEA sponsored Interagency Committee on Response to Nuclear Accidents (IACRNA), whose purpose is to coordinate the arrangements of the relevant international intergovernmental organizations for preparing for and responding to nuclear and radiological emergencies, in-

cluding during the holding of the INEX and ConvEx series of international emergency response exercises.

It was reported that following the successful FAO hosting of the most recent 19th Regular Meeting of IACRNA in Rome in April 2007, revised *Cooperative Arrangements Between FAO and IAEA in Relation to Food and Agriculture in the Case of a Nuclear or Radiological Emergency* were finalized and signed by the respective organizations in July 2007. It was noted that these *Cooperative Arrangements* detailed inter-agency procedures, communication channels and response activities as required under the *Joint Radiation Emergency Management Plan of the International Organizations* (EPR-JPLAN 2006).

The reporting officer highlighted the close collaboration between FAO and the IAEA Incident and Emergency Centre (IEC) through the attendance of FAO/Rome Headquarters Staff, as well as the FAO Representative in Mexico, in the recent ConvEx-3 emergency response exercise planning meeting held in Veracruz City, Mexico from 2-4 October 2007, especially concerning the inclusion of exercise parameters related to the contamination of food and agricultural commodities. It was noted that current related FAO activities include the development of qualification criteria and a list of potential experts in the application of food and agriculture countermeasures in response to nuclear emergencies and radiological events.

The reporting officer also noted FAO participation in the ongoing revision and co-sponsorship of the IAEA Basic Safety Standards through the development of provisions related to emergency preparedness and response to nuclear or radiological emergencies affecting food and agriculture, including through FAO participation in the international organization secretariat established for the review and revision of these standards.

Related FAO responsibilities include the recent three-year extension (2008-2010) of FAO participation in the Radiation Safety Standards Committee (RASSC), which is a standing IAEA body of senior experts in radiation safety whose objective is to achieve consensus, quality, coherence and consistency in the development of international standards for radiation safety. It is anticipated that FAO will be actively involved through RASSC in the elaboration of the new DS 421 *Safety Guide on the Protection of the Public Against Exposure to Natural Sources of Radiation, including NORM Residues,* as related to existing situations of radiation exposure in foodstuffs. This would include exposure to radionuclides from residues arising from past activities that were not regulated on the basis of the current system of radiation protection or that were subject to an earlier, less rigorous control regime and/or past activities that were not regulated at all with regard to radiation protection.

The reporting officer also participated in discussions concerning the newly formed WPNEM Expert Group on Recovery, Agriculture and Food (EGR), primarily in regard to its terms of reference and further activities related to the exchange of information on national and international strategies and approaches and criteria related to the application of agricultural countermeasures in the event of a nuclear accident or radiological event. It was noted that further discussions would include an investigation of the interface between emergency response and recovery plans; an analysis of lessons learned and strategies for future consequence and recovery management; and, the identification of potential objectives related to food and agriculture in future nuclear response exercises.

In view of ongoing work of various international organizations directly related to activities of the Joint Division, it is anticipated that a representative of FAO will continue to be involved with international activities related to nuclear and radiological emergencies affecting food and agriculture, including:

- Participation in planning for the ConvEx-3 Exercise to be held from 9-10 July 2008.
- Further work undertaken by the OECD/WPNEM Expert Group on Recovery, Agriculture and Food (EGR), including a review of the expert group activities related to a new INEX series of international emergency exercises.
- Participation in the revision of the IAEA Basic Safety Standards, including in current revisions to the Standard and in the elaboration of the new DS 421 Safety Guide on the Protection of the Public Against Exposure to Natural Sources of Radiation, including NORM Residues.

Investigation into Environmental/Food Chain Contamination in Khongor Soum, Mongolia; 6-15 March 2008

Technical Officer: Andrew Cannavan

In late January 2008, the Mongolian Government requested assistance through the UN Resident Coordinator to investigate environmental and food chain contamination associated with the use of toxic chemicals in a small scale gold ore processing operation in Khongor Soum, Darkhan Uul Aimag, approximately 200 km from Ulaan Baatar. A contamination incident in April 2007 had resulted in pollution of the ground, air and drinking water with mercury and cyanide and had caused intoxication of the local population and loss of livestock. A decontamination operation was carried out at the site following the pollution incident, but persistent reports of human health problems, high levels of animal abortions and congenital anomalies in pigs, sheep and cows prompted the more recent request for assistance. Teams from WHO, UNEP and FAO were fielded to investigate the situation. FAO

was requested to provide an assessment of the effect of the suspected environmental contamination on locally produced vegetables, milk, water and animal health.

The Agrochemicals Unit Head, as a member of the FAO team, carried out field investigations, assessed laboratory results, evaluated laboratory capacity and liaised with other UN organizations and Mongolian authorities in attempting to elucidate the cause of the reported problems in order to make recommendations for follow-up actions.

Preliminary results of the investigations were in agreement with the conclusions of the Mongolian authorities, that neither mercury nor cyanide were likely to be the cause of the current human and animal health problems reported at that location. However, there is likely to be pollution from artisanal gold mining, power plant waste and various other industrial operations observed at the site, which may have a bearing on the reported symptoms. Brucellosis was also confirmed in cattle in the region, which may be a factor in the observed incidence of cattle abortions. An assessment of the laboratory capacity and the ability to respond to emergencies or issues such as that under investigation indicated that there is a need for considerable capacity building in this field.

A two-year FAO Technical Cooperation Project is being formulated to further investigate this and related problems in other regions of the country.

Asia Pacific Food Testing Summit for the Asia/Pacific Region; Hainan Province, China; 16-19 March 2008

Technical Officer: Josef Brodesser

The reporting officer participated in the Asia Pacific Food Testing Summit for the Asia/Pacific region, designed to build awareness of international regulations and guidelines on food safety with regard to chemical residues and contaminants in food, and the laboratory procedures and analytical techniques available to meet the requirements set down in these regulations and guidelines. The reporting officer introduced the food safety activities of the Joint Programme, presented a keynote lecture on 'Global Food Safety Regulations', and sat on an expert panel for question and answer sessions.

This meeting was organized in collaboration with Waters Corporation and was cost-free to the IAEA. Approximately fifty scientists and regulators, mostly from China but with delegates also from the Republic of Korea, Malaysia, Philippines, and Indonesia, participated in the summit. The programme comprised a series of presentations on regulatory and analytical issues related to chemical contaminants in food, and question and answer sessions.

The reporting officer provided an introduction to the work of the Joint FAO/IAEA Programme in the field of food safety, residues and contaminants, and gave a keynote lecture on 'Global Food Safety Regulations', with emphasis on regulations that are relevant for the countries in the region, i.e. from the USA, the EU, Australia, New Zealand, and others. Other keynote speakers gave presentations on Food Safety and Testing and relevant analytical technologies. Further documents, presentations, and supporting information are available from the Food and Environmental Protection Section.

The reporting officer also participated as a member of an expert panel in question and answer sessions, which were lively and interactive, with questions on the "farm to fork" concept, Codex, international regulations and guidelines, as well as technical questions on aspects such as analytical methodology, sample preparation and data analysis.

This was the third collaboration with Waters Corporation for this type of meeting in the Asia/Pacific region and it proved very successful, both in terms of awareness building of the ever changing regulatory issues amongst regulators and scientists in the region, and as a means to inform relevant people of the part played by the Joint FAO/IAEA Programme in assisting Member States to deal with these problems. The contacts made at these events have also resulted in collaboration with IAEA, including nominations for participation in training workshops run by the Training and Reference centre for Food and Pesticide Control at Seibersdorf.

2nd Session of the Codex Committee on Contaminants in Foods (CCCF); The Hague, the Netherlands; 31 March-4 April 2008

Technical Officer: David H. Byron

The reporting officer and Mr. Ross Jeffree of the IAEA Marine Environment Laboratory participated at the 2nd Session of the Codex Committee on Contaminants in Foods (CCCF) to report on the Coordinated Research Project (CRP) on Applications of Radiotracer and Radioassay Technologies to Seafood Safety Risk Analysis (K4.10.10), particularly in regard to the potential and eventual consideration of the CRP research results in the elaboration of Codex guideline levels for contaminants in seafood (see Feature Article in this issue).

The 2nd Session of the CCCF was held in The Hague, The Netherlands, from 31 March – 4 April 2008. The Session was attended by 241 delegates from 63 Codex Member governments and 19 international governmental and non-governmental organizations, including UN agencies. Ms. Annemie Burger, Director-General of the Netherlands Ministry of Agriculture, Nature and Food Quality, opened the meeting. The Session was chaired by Mr. Ger de Peuter, Director of the Executive Boards Office.

As a subsidiary body of the Joint FAO/WHO Codex Alimentarius Commission, the terms of reference of the CCCF includes:

- The establishment of permitted maximum or guideline levels for contaminants and naturally occurring toxicants in food and feed.
- The preparation of priority lists of contaminants and naturally occurring toxicants for risk assessment by the Joint FAO/WHO Expert Committee on Food Additives (JECFA).

In presenting their document on Matters of Interest Arising from the International Atomic Energy Agency (CX/CF 08/2/3 – Add. 1), the reporting officers noted that the research generated by the CRP on Applications of Radiotracer and Radio-assay Technologies to Seafood Safety Risk Analysis could lead to the potential establishment of maximum levels in seafood for those contaminants already evaluated (lead, cadmium) by JECFA as well as contaminants not evaluated to date (harmful algal blooms, persistent organic pollutants and other toxins) through the Joint FAO/WHO Codex Alimentarius Commission. In this regard, it was noted that the CRP participants included Brazil, Canada, Chile, China, France, French Polynesia, Ghana, Japan, Pakistan, the Philippines, Vietnam and a representative of the World Health Organization (WHO).

The CCCF noted the IAEA proposal, and decided that specific discussions should be held at the in-session physical Working Group on Priorities of Contaminants and Naturally Occurring Toxicants Proposed for Evaluation by JECFA (see below).

Subsequent to their presentation made to the full plenary meeting, the reporting officers attended the in-session physical Working Group on Priorities of Contaminants and Naturally Occurring Toxicants Proposed for Evaluation by the JECFA. In discussing their proposal to consider research arising from the CRP in the establishment of maximum levels for cadmium (oysters, scallops and cephalopods) and bio-toxins (paralytic shellfish poisoning and ciguatera toxin) in seafood, the Working Group noted that the project would focus on generating monitoring data related to natural background contamination and exposures related to specific edible tissues.

In this regard, the Working Group was reminded of the previous decision of the Committee to exclude the establishment of maximum levels for cadmium in oysters and scallops due to their low contribution to overall human exposure. The Working Group therefore concluded that the new data generated by the CRP should be considered when available for the potential elaboration of maximum levels for cadmium in these commodities.

In view of the ongoing work related to the generation of CRP data related to the potential establishment of Codex maximum levels for contaminants in seafood, it is envisioned that a representative of NAFA and/or NAML will attend the next 3rd Session of the CCCF to report on the current results of the CRP, including deliberations and conclusions arising from the 2nd RCM.

40th Session of the Codex Committee on Pesticide Residues (CCPR); Hangzhou, China; 14-19 April 2008

Technical Officer: Josef Brodesser

A representative of the IAEA participated at the 40th Session of the Codex Committee on Pesticide Residues (CCPR) and chaired the CCPR *ad hoc* Working Group on Methods of Analysis and Sampling. Among other issues, the representative introduced the IAEA prepared Discussion Papers on the Estimation of Uncertainty of Results for the Determination of Pesticide Residues (CX/PR 08/40/5) and on Procedures for the Separation of Milk Fat From Whole Milk (CX/PR 08/40/6).

In this regard, the CCPR proposed the revision of the Guidelines on the Estimation of Uncertainty of Results (CAC/GL 59-2006) for approval as new work by the 31st Session of the Codex Alimentarius Commission. The CCPR further agreed that an electronic working group coordinated by the IAEA would prepare a proposed draft revision to the Guidelines in order to provide practically oriented recommendations, including examples on the estimation of measurement uncertainty and the application of the concept in pesticide residue analysis, so as to better facilitate the understanding of the estimation of measurement uncertainty by pesticide residue testing laboratories.

The IAEA looks forward to the continued consideration of issues related to methods of analysis and sampling for pesticide residues through the Codex Committee on Pesticide Residues, including the Chairmanship of the CCPR *ad hoc* Working Group on Methods of Analysis and Sampling.

EuroResidue VI Conference on Residues of Veterinary Drugs in Food; Egmond aan Zee, the Netherlands; 19-21 May 2008

Technical Officer: Andrew Cannavan

The EuroResidue conferences, currently held every four years, are amongst the most important meetings in the world on residues of veterinary drugs in food and the environment. The conference covers aspects such as analytical techniques, pharmacological and toxicological studies, and registration and regulation of veterinary drugs. At the EuroResidue VI conference, approximately 400 regulators and experts from countries throughout the world and from various scientific disciplines met to discuss developments and problems in the field of residue analysis and to exchange ideas.

On the first day of the conference, the Agrochemicals Unit Head presented a paper entitled ‘An investigation

into the possible natural occurrence of chloramphenicol in poultry litter'. This work was carried out under the CRP 'Development of strategies for the effective monitoring of veterinary drug residues in livestock and livestock products in developing countries' (D3.20.22) by the Department of Livestock Development (DLD) in Thailand in collaboration with the Agrochemicals Unit and a research agreement holder Queen's University Belfast, UK.

The study was designed to investigate claims from poultry producers in Thailand that residues detected in their products of the antibiotic chloramphenicol, which is banned for use in food-producing animals, were caused by natural biosynthesis of the compound in the production environment rather than by abuse of the drug. The detection of chloramphenicol in exported foods has caused many trade disputes, rejection of shipments from importers and loss of revenue to the exporters in recent years. The possibility of contamination from natural sources has been claimed by producers in Thailand, as well as in other regions of the world, but with no supporting evidence. The findings of the study performed in Thailand did not support this claim for the particular production systems in place there.

Discussions following the presentation led to proposals collaboration with major European laboratories for follow-up investigations into analytical strategies to distinguish contamination from naturally produced chloramphenicol and the chemically synthesized version.

The Agrochemicals Unit Head also participated in a workshop on 'Associated and third countries and new (EU) Member States', convened by Dr. J. McEvoy of the EC Food and Veterinary Office. Discussion centred on the difficulties encountered in establishing equivalence of food safety standards to facilitate export of food commodities to EU, and on implementing EU legislation for new EU Member States. Presentations were given by Dr. P. Kanari (State General Laboratory, Cyprus) on the residues control system in Cyprus, which had benefited from the establishment of a residues screening laboratory under an IAEA TCP, and by Dr. S. Kanarat (DLD, Thailand), a research contract holder in CRP D3.20.22, on the control of residues in the poultry export industry in Thailand.

A meeting was held with several prospective partners to discuss a call for research/training proposals to be funded under the EU 7th Framework/Marie Curie Actions programme, entitled Marie Curie Initial Training Networks. The Agrochemicals Unit was invited by the prospective project coordinator to participate with eight other partners in formulating and submitting a proposal. The closing date for proposals is 2 September 2008.

The Agrochemicals Unit Head met with Dr. Eric Verdon, from the EU Community Reference Laboratory for veterinary drug residues, Agence Française de Sécurité Sanitaire des Aliments (AFSSA), France, to discuss several TCPs for which AFSSA are providing expertise (ERI/5/005, ALG/5/025, BEN/5/003). Fellowship training and expert missions were planned and strategies for optimizing available resources to achieve project objectives were discussed.

It was noteworthy that several participants at the conference were former participants in training courses or workshops run at Seibersdorf, VIC or on a regional basis, both from countries who are now EU Member States (Poland, Czech Republic, Estonia, Cyprus) and from developing countries elsewhere (including Thailand, Brazil, Argentina, Chile, Mexico). Several participants had also been involved in CRP D3.20.22, and some material was presented in poster sessions that arose from work in that CRP.

The conference provided an opportunity to keep abreast of relevant developments and maintain and initiate collaborations of benefit to IAEA Member States, and to build awareness of the role and impact of the FAO/IAEA programme in food safety research and capacity building.

Forthcoming Events

Training Workshop on an Introduction to Quality Assurance/Quality Control Measures in Pesticide Residue Analytical Laboratories; Seibersdorf Laboratories, Austria; 6-31 October 2008

Technical Officer: Andrew Cannavan

The presence of pesticide residues in food and the environment may affect human health and create barriers to trade in agricultural commodities. The control of pesticide residues is achieved through the application of good agricultural practices (GAP). Analytical laboratories play an integral role in the application of GAP through verification not only of the input quality, but also of the output quality of the agricultural commodity. Laboratories may also provide information and advice to farmers and producers, either directly or through extension services. Current international agreements require that the pesticide residue content of commodities moving in international trade is certified by laboratories implementing appropriate quality control and

quality assurance systems. In order to produce internationally acceptable results, laboratory staff must be familiar with the principles of ISO Standard 17025 and Good Laboratory Practice (GLP). This requires intensive practical and theoretical training.

In response to these Member States' needs, the FAO/IAEA Training and Reference Centre for Food and Pesticide Control will hold a Training Workshop on the Introduction to Quality Assurance/Quality Control Measures in Pesticide Residue Analytical Laboratories at the FAO/IAEA Agriculture and Biotechnology Laboratory in Seibersdorf, Austria, from 6 – 31 October 2008.

The objectives of the Workshop are to introduce and elaborate the QA/QC principles relevant to pesticide residue analysis according to ISO Standard 17025 and GLP Guidelines, and to discuss the various possible roles of quality assured laboratories in the application and monitoring of the effectiveness of GAP.

The course is open to analysts from Member Countries of FAO or IAEA. The analysts should come from laboratories authorized by Governments to perform analyses for the official control of pesticide residues in food commodities, thereby facilitating international trade and the provision of safe food supplies at the national level. Further information will be posted on the Food and Environmental Protection website at http://www-naweb.iaea.org/nafa/fep/index.html.

Status of Coordinated Research Projects

Coordinated Research Project on the Use of Irradiation to Ensure the Safety and Quality of Prepared Meals (D6.20.07)

Technical Officer: David H. Byron

The overall objective of the Coordinated Research Project (CRP) on the Use of Irradiation to Ensure the Safety and Quality of Prepared Meals was to evaluate the effectiveness of irradiation as a method to ensure the microbiological safety and extend the shelf-life of prepared meals, stored under ambient, chilled or frozen conditions, and to evaluate the sensory quality of the treated products. The specific objective was to use validated procedures for irradiation treatment and process control, and to use validated methods for assessing microbiological safety and quality as well as the sensory evaluation of prepared meals, mainly of ethnic origin.

The CRP demonstrated that radiation processing of prepared meals resulted in safer food by eliminating pathogens and extended the shelf-life by decreasing the number of spoilage organisms without significantly jeopardising the overall quality. The safety of radiation processed products was demonstrated using challenge tests/inoculated pack studies with various pathogenic test organisms or their surrogates. The project also confirmed the results of consumer studies that the provision of information about the nature of food irradiation increases consumer acceptance and the willingness to pay a premium for enhanced product safety and quality. Radiation treatment thereby offers the opportunity for a wider utilisation and marketing of such high quality meals, including many ethnic food products.

Although the CRP demonstrated that radiation processing can facilitate the production of safer and extended shelf-life products, the work also highlighted the complexity and technological challenges of using radiation processing for multi-component food systems such as prepared meals. In view of the insight gained regarding the quality changes that occur in the irradiated foods investigated, further research activities were recommended.

The CRP results will be published in 2008 as an IAEA non-serial in-house publication. Further information will be posted on the Food and Environmental Protection website at http://www-naweb.iaea.org/nafa/fep/index.html.

Current Technical Cooperation Projects

Project Number	Title and Project Objectives	Technical Officer
ALG5025	**Strengthening Capabilities to Control Veterinary Drug Residues in Foodstuffs** To improve consumer protection and facilitate trade through increased capacity in the determination of veterinary drug residues in foods.	A. Cannavan D. H. Byron
ANG5003	**Veterinary Drug Residue Monitoring Programme** To establish a capability to determine veterinary drug residues in livestock products.	A. Cannavan D. H. Byron
ARG5011	**The Use of Ionizing Radiation for the Phytosanitary Treatment of Fresh Fruit** To strengthen the national technological capacity for the establishment of irradiation services for phytosanitary treatments.	To be announced
BEN5003	**Veterinary Drug Residue Monitoring Programme** To develop a capacity for veterinary drug residue monitoring in livestock products.	A. Cannavan D. H. Byron G. J. Viljoen
BEN5004	**Regulatory Control and Monitoring of Mycotoxins to Facilitate Trade** To establish laboratory capacities and analytical procedures for mycotoxin control.	J. Brodesser
BGD5024	**Phytosanitary Treatment for Insect Pests Infesting Fresh Fruits and Vegetables** To strengthen the national capacity in applying irradiation as a quarantine treatment for insect pest infestations in fresh fruits and vegetables.	To be annouced
BKF5005	**Regulatory Control and Monitoring of Contaminants and Residues** To strengthen the technical capabilities of the National Public Health Laboratory (LNSP) in analysis, monitoring and surveillance of food and the environment by establishing an improved quality process and procedures to perform contaminant and pesticide residue analysis in foodstuff to comply with international standards.	J. Brodesser B. M. Maestroni
BOL5015	**Developing Pesticide Residue Monitoring Capabilities in Support of Cash Crops** To establish pesticide monitoring capabilities to obtain baseline data on pesticide residue levels in cash crops and the environment.	I. G. Ferris
BOL5017	**Capacity for Monitoring Pesticide Residues for Compliance with Minimum Risk Levels and Good Agricultural Practice According to ISO 17025** To improve food safety and environmental quality in Bolivia and the competitiveness of Bolivian farmers.	I. G. Ferris B. M. Maestroni

Project Number	Title and Project Objectives	Technical Officer
BRA5058	**Applying Ionizing Radiation for Food Security and Healthcare** The main goal is to train specialized personnel capable of processing food and blood with radiation, taking into consideration the variety of foodstuffs, storage facilities and climatic conditions in the country.	To be announced
CHI5046	**Certification of Exported Animal Products Using Nuclear and Other Analytical Techniques** To strengthen the analytical capabilities of laboratories authorized to certify exported animal products to support the national programme on control of chemical residues, in order to comply with international standards, harmonize measurement results and promote mutual recognition agreements on product certification.	A. Cannavan D.H. Byron
CHI5048	**Integrated Watershed Management for the Sustainability of Agricultural Lands** To develop a management model for sustainable agricultural systems through nuclear and chemical diagnosis of the impacts of anthropogenic practices.	I. G. Ferris L. Mabit
CMR5014	**Creation of a Nuclear Analysis Laboratory in CATEN for Food Safety** Improving the assessment of good agricultural practices at a catchment scale using laboratory analytical support.	J. Brodesser I. G. Ferris
COL5021	**Cost Benefit Assessment for the Modernization of an Irradiator in Colombia** To develop a proposal for the sustainable operation of a pilot irradiator through the realization of a cost benefit analysis with account taken of the situation in Colombia.	To be announced
COL5022	**Assessment of the Impact of Pesticide Use in Lake Tota, Boyacá, Colombia** To identify sources of agrochemical pollution; to determine the pesticide transport mechanism, the risk of pollution from agrochemicals applied to the area of the project and the environmental impact and risk to human health; to upgrade the pesticide residue analysis laboratory for monitoring and analysis of pollution in water resources.	I. G. Ferris B. M. Maestroni
COS5026	**Management and Appropriate Use of Insecticide-nematicides** To reduce the adverse impact of insecticide-nematicides through the application of water management and nuclear techniques.	I. G. Ferris
CPR5016	**Strengthening the Quality Assurance System for Food Irradiation** To strengthen the quality assurance system and enhance the capacity of implementing quality standards and evaluation of existing and established standards on food irradiation in order to raise the quality and quantity of irradiated food.	To be announced
ERI5005	**Zoonotic (diseases that can be transmitted from animals to humans) Disease Control and Analysis of Veterinary Residues in Foods** The objective of the project is to determine the epidemiological prevalence of brucellosis and tuberculosis in the major dairy producing areas to establish baseline data on veterinary drug residues in milk and meat products.	A. Cannavan H. Unger

Project Number	Title and Project Objectives	Technical Officer
GUA5015	**Establishing a Food Irradiation Plant** To establish the technical conditions for setting up a food irradiation plant in Guatemala in order to support agriculture exports.	To be announced
HAI5003	**Enhancing Crop Productivity through the Application of Isotope Nuclear Techniques** To enhance national capabilities to apply suitable agricultural practices and nuclear techniques to increase crop productivity to meet national requirements for food security.	L.K. Heng I. G. Ferris
INS5033	**Enhancement of Quality Assurance for the Analysis of Veterinary Drug Residues** To enhance the national capacity to ensure the safety of food products of animal origin.	A. Cannavan D.H. Byron
IVC5027	**Monitoring of Pesticide Residues in Food Products** To establish a sustainable capacity for control and monitoring of pesticide residues in food products.	J. Brodesser B. M. Maestroni
MAK5005	**Upgrading of Food Safety Systems** To improve the food safety system in the country.	J. Brodesser B. M. Maestroni
MLI5018	**Regulatory Control and Monitoring of Pesticides and Residues in Fresh Produce** To strengthen the technical capabilities of the Public Health Laboratory (LNS) and the Central Veterinary Laboratory (LCV) to perform pesticide and residue analysis in foodstuff to comply with international standards.	J. Brodesser
MNE8002	**Upgrading a Persistent Organic Pollutant Laboratory towards Accreditation for Environmental Monitoring** To upgrade capacities in Montenegro and renovate the existing laboratory equipment at CETI through the provision of a new GCMS system required for POP control, especially for the presence of polychlorinated dibenzo-dioxins (PCDD) and polychlorinated dibenzo-furans (PCDF) and other POPs in the air, water and human food.	A. Safrany J. Brodesser
MON5012	**Monitoring of Residues in Livestock Products and Surveillance of Animal Diseases** To develop a capacity for veterinary drug residue and contaminant monitoring in livestock products and to expand serosurveillance capabilities to achieve rinderpest and foot and mouth disease (FMD) free status in the country or specific zones.	A. Cannavan J. R. Crowther
MOR5024	**Industrial Application of Irradiation** To reduce staple food losses, increase the microbiological safety of foods, and facilitate food trade through the use of irradiation technology.	To be announced
MOR5029	**Conserving and Improving the Quality of Aromatic and Medicinal Plants through Irradiation, and Transfer of this Procedure on an Industrial Scale** To help promote aromatic and medicinal plants in Morocco and to improve the income of those who grow, produce and sell them by valorizing them.	M.H. Sampa

Project Number	Title and Project Objectives	Technical Officer
MYA5015	**Strengthening the National Capacity for the Production of Veterinary Vaccines** To enhance the national capacity for quality vaccine production to support efforts to control infectious diseases in livestock production, particularly foot and mouth disease.	J. R. Crowther A. Cannavan
NIC5007	**Determining Drug Residues in Bovine Meat Exports** To determine veterinary medicine residues and growth promoters through nuclear and complementary techniques to improve production, product quality and diagnostic techniques.	A. Cannavan D.H. Byron J. Brodesser
NIR5033	**Improvement of Quality Management and Food Safety Monitoring Using Isotope Techniques** To improve the safety and quality of food, and to provide up-to-date information on methods of regulatory control in order to strengthen the technical capability to perform pesticide residue analysis in foodstuffs. To improve capacities and procedures for mycotoxin control for compliance with international standards. To serve as a reference center in the region.	J. Brodesser D. H. Byron
NIR5034	**Feasibility Study on the Optimal Use of an Industrial Gamma Irradiation Facility** To conduct a feasibility study on the optimal use of the new Gamma Irradiation Facility for industrial application in Nigeria.	M.H. Sampa
PAN5017	**Monitoring Pesticide Residues in the Production of Tropical Fruit (Pineapples and Melons) and Controlling Analytical Quality with the Aid of Nuclear Techniques** To improve food safety in the production of tropical fruits in Panama.	I. G. Ferris B. M. Maestroni
PHI5030	**Upgrading the Gamma Irradiation Facility** To upgrade and increase the throughput of the pilot-scale gamma irradiation facility at the Philippine Nuclear Research Institute (PNRI) to a semi-commercial one.	M. H. Sampa S. M. Haji-Saeid
RAS5046	**Novel Applications of Food Irradiation Technology for Improving Socioeconomic Development (RCA)** To focus on the application of technologies related to new uses of irradiation for sanitary and phytosanitary purposes, including technology transfer to participating RCA Member States.	To be announced
RER9074	**Long-Term Countermeasure Strategies and Monitoring of Human Exposure in Rural Areas Affected by the Chernobyl Accident** To develop a decision support system for countermeasure strategies in populated rural areas affected by the Chernobyl accident, and enhance capabilities to monitor associated long-term human exposure.	V. Berkovskyy I. G. Ferris S. Fesenko
RLA5050	**Strengthening Laboratory Capacity to Assess the Implementation of Good Agricultural Practices in the Production of Fruit and Vegetables in Latin America** To improve the assessment of good agricultural practices, with the support of analytical laboratories, in the following basins: Alto Valle del Rio Negro and Neuquén, valleys of the Ribeira river in Brazil and the Apalta river in Chile, Lake Tota in Colombia, the Machuca-Jesús María river in Costa Rica, Ariguanabo in Cuba, Guayas in Ecuador and Salto in Uruguay.	I. G. Ferris G. Dercon B. M. Maestroni

Project Number	Title and Project Objectives	Technical Officer
ROK5034	**Nutrient Efficient Crops and Safe Use of Pesticides in Sustainable Crop Production** To analyze the behaviour of pesticides and evaluate their persistence in vegetables grown under greenhouse conditions, and to investigate the ability of crops to access nutrient reserves, with special reference to phosphorus, in the volcanic ash soils of Cheju Island.	I. G. Ferris
SEN5027	**Regulatory Control and Monitoring of Contaminants and Residues in Fresh Produce** To improve the safety and quality of foods, and to provide up-to-date information on methods of regulatory control in order to strengthen the technical capability to perform pesticide residue analysis in foodstuff, and to implement capacities and procedures for mycotoxin control to comply with international standards.	J. Brodesser D.H. Byron
SLO5002	**Protecting Groundwater and Soil against Pollutants Using Nuclear Techniques** To improve the capability of counterpart institutes in addressing nitrate and pesticide in drinking water by calibrating and applying relevant risk management approaches at benchmark sites in Slovenian catchments.	J. Adu-Gyamfi I. G. Ferris
SRL5039	**Monitoring of Chemical Residues and Food-borne Pathogens** To extend the residue screening and testing capability through upgrading the food microbiology laboratory for monitoring of nitrofuran group of residues and food-borne pathogens.	A. Cannavan
SRL8019	**Technical Support for the Establishment and Operation of a Multi-Purpose Gamma Irradiation Facility** To provide technical assistance for the establishment of a multi-purpose gamma irradiation facility (MGIF) in Sri Lanka to sterilize medical products, to develop health care products, and to improve the quality and safety of food and other agricultural products.	M.H. Sampa
SYR5020	**Implementation of Quality Assurance and Quality Control Procedures in Pesticide Residue Analysis Laboratories** To improve the national pesticide residue monitoring programme and introduce analytical quality assurance and validated risk management technologies, which will lead to more sustainable cropping systems.	J. Brodesser D. H. Byron
URT5024	**Nuclear Techniques for the Monitoring of the Food Quality in the United Republic of Tanzania** To improve consumer protection and facilitate trade.	J. Brodesser

Agrochemicals Unit, FAO/IAEA Agriculture & Biotechnology Laboratory, Seibersdorf

IAEA Technical Cooperation Project PAN/5/015: Quality Assurance in Pesticide Residue Analysis for Agriculture Production

Technical Officer: Britt M. Maestroni

Ensuring food safety is a challenging task that requires the identification and strengthening of weak links throughout the food production chain. Farmers can demonstrate that products comply with Codex maximum limits if laboratory results of pesticide residues in fresh fruits and vegetables are produced according to the requirements of ISO/IEC17025.

Ms. B. Checa is showing Ms. B. Maestroni (ACU) how instrument log books are used at MIDA (December 2006).

In 2005, the Republic of Panama initiated an IAEA technical cooperation project that aimed to establish a quality-assured laboratory for the analysis of pesticide residues in agricultural products. The project involved the Ministerio de Desarrollo Agropecuario (MIDA), Dirección Nacional de Sanidad Vegetal, located in Tocumen for monitoring pesticides residues. The Agrochemicals Unit (ACU) provided training for the laboratory staff both at Seibersdorf and through expert missions to MIDA, as well as online training opportunities. Initial capacity in the field of pesticide residue analysis has been transferred to MIDA through five expert missions, three fellowships and two scientific visits. On several occasions the staff of the Agrochemicals Unit, particularly Mr. Rathor, trained the MIDA laboratory staff on pesticide residue analysis in fruit commodities, including radiotracer techniques using ^{14}C radio-labelled pesticides. Ms. Maestroni (ACU) assisted in the overall management of the project.

Ms. B. Checa (MIDA) and Mr. N. Rathor (ACU) are preparing pineapple extracts for injection in the GC-NPD at the Agrochemicals Unit in Seiberdorf (March 2007).

MIDA staff obtaining pineapple samples for the laboratory method validation study.

The IAEA Department of Technical Co-operation, Division for Latin America, funded the essential equipment and instrumentation, such as mass spectrometry as well as a liquid scintillation counter, food choppers, turbo evaporation stations, ultra turraxes and analytical balances. Similar instruments and equipment are used in the ACU in Seibersdorf, thus facilitating the exchange of methods and troubleshooting. The ACU assisted in the strengthening of Panama's local capabilities through a stepwise implementation of quality assurance and quality control measures, including documentation of work, preparation of quality manuals, audit of laboratory facilities, establishment of method performance parameters, method validation, uncertainty estimation and data analysis.

Mr. Rathor (ACU) is training MIDA laboratory staff in radiotracer techniques using ^{14}C radiolabelled chlorpyriphos.

As a result of a scientific visit of MIDA staff to the ACU in Seiberdorf, the analysis of pesticide residues in pineapple and melon were validated using the quick, easy, cheap, effective, rugged, and safe (QuEChERS) method, and the method performance parameters were established with the aid of ^{14}C-labelled Chlorpyriphos.

The project was officially closed in 2008. Decisive government action and effective technology transfer has enabled MIDA to introduce a quality system and consequently dependable feedback, based on quality-assured analytical results to farmers, agricultural exporters and consumers. This extended role for the analytical laboratory will potentially reduce pesticide use, thus helping to delay the onset of pesticide resistance and reduce pesticide residues in food while at the same time conserving valuable pesticides and lowering costs to farmers and consumers.

MIDA is currently preparing for formal accreditation according to ISO 17025 to support the government's initiative of enhanced regulatory transparency and trade facilitation.

In front of MIDA laboratory, Panama.

EU FP6 'ProSafeBeef' Meeting Report

Technical Officers: Andrew Cannavan, Marivil D. Islam and Mariana Schweikert Turcu

On 1 April 2008, the first annual meeting of the EU 6th Framework Project 'Advancing beef safety and quality through research and innovation' (ProSafeBeef) was held in Ghent, Belgium. Although no members of the the Agrochemicals Unit (ACU) were able to attend the meeting, a progress report was presented to the work-package 1.4 leader on the initial stages of the development of a multiresidue method for the determination of anthelmintic drug residues in beef by liquid chromatography-tandem mass spectrometry (LC-MSMS).

It was reported that LC-MSMS tuning parameters had been elaborated in ACU for the 34 anthelmintic analytical standards received from Ashtown Food Research Centre, Dublin, Ireland (AFRC), based on information transferred from AFRC. Chromatographic parameters were also developed to elute the 34 analytes within an eleven minute run time. Chromatographic separation was not possible within this run time, but mass spectrometric resolution of the peaks was achieved, with no observed cross-talk interference. Progress was made in the analysis of a problematic compound, triclabendazole sulphone. This compound had initially proved to be difficult to detect by mass spectrometry, but parameters were developed in negative electrospray mode to produce fragmentation of the precursor ion at m/z 328.9 Da giving daughter ions at 184, 182, 145.9 Da, thus fulfilling the requirements for a confirmatory assay.

Potential problems reported were the unexpected LC/MSMS system breakdown, the presence of a split peak for some compounds when using aqueous formic acid (overcome by using ammonium formate, as advised by AFRC), and the insufficient amount of standards to conduct the study. Further expectations under the project include the timely transfer of the method protocol from AFRC for adaptation and validation in ACU as well as an additional amount of anthelmintic standards, including internal standards, to proceed further with our method validation study.

INFOCRIS and the FOOTPRINT Pesticide Properties Database (PPDB)

Technical Officer: Ian G. Ferris

In 1999, our Food Contaminant and Residue Information System (INFOCRIS) database was launched to exchange information, to help manage risks associated with food and environmental contaminants, to facilitate networking with like-minded organizations, and to keep information dissemination costs as low as possible. Laboratory personnel and regulators were targeted, especially those from developing countries, where access to information is often limited.

Currently INFOCRIS provides annotated records on over 600 individual pesticides with hyperlinks to a relevant glossary, bibliographical and multimedia resources. INFOCRIS is both a collector and redistributor of information that includes data collated from many sources. Where possible, emphasis is given to the work of the Joint FAO/WHO Meeting on Pesticide Residues (JMPR), FAO/WHO pesticide standards and regulatory pesticide reviews.

Activities are supported by two groups working in parallel: content providers and system developers. The former includes organizations and individuals who give freely of their time and information resources. For example, 2- and 3- dimensional chemical structures were provided by the EU Cascade project (http://www.cascadenet.org/).

In 2005, INFOCRIS (http://www-infocris.iaea.org/en/W3.exe$BBShow?ID=8) became part of the IUPAC project on "Global availability of information on agrochemicals" (http://www.iupac.org/objID/Institution/2001-022-1-600).

International events sponsored by IUPAC have attracted new INFOCRIS editors as well as major data contributions. For example, in May 2008 the EC Footprint project (http://www.eu-footprint.org) made available over 23,000 individual pesticide property values. Good complementarities exist with the Footprint project in terms of geographical focus and broader objectives.

FOOTPRINT is a research project funded by the European Commission as part of its 6th Framework Programme for Research and Technological Development. The project aims to develop computer tools to evaluate and reduce the risk of pesticides impacting on water resources in the EU (surface water and groundwater), i.e. aims similar to the IAEA coordinated research project D5.20.35 on "Integrated Analytical Approaches to Assess Indicators of the Effectiveness of Pesticide Management Practices at a Catchment Scale".

FOOTPRINT PPDB is a comprehensive relational database of pesticide physicochemical and ecotoxicological data. The database has been developed by the Agriculture & Environment Research Unit at the University of Hertfordshire, as part of the EU-funded FOOTPRINT project. Footprint PPDB and INFOCRIS support browsing by alphabetic listing. INFOCRIS also provides "Google like" search options when you know the IUPAC or CAS chemical name, synonyms or common names. For analysts and regulators, the INFOCRIS Properties search form is particularly useful, including allowing for searches by molecular weight and many pesticide end points.

Only a limited number of languages are supported and much work remains to be translated, especially the 36,000 glossary terms that are critical to developing a common understanding of pesticide issues and processes affecting their fate and impact. If you would like to volunteer as a translator or if you have new information or think some information is incorrect, please contact INFOCRIS (INFOCRIS.feedback@iaea.org) IUPAC (UnsworJo@aol.com) or FOOTPRINT (aeru@herts.ac.uk).

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IAEA International Atomic Energy Agency

Food and Environmental Protection
Newsletter Vol. 11, No. 2 July 2008

The FEP Newsletter is prepared twice per year by the Food and Environmental Protection Section, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture and FAO/IAEA Agriculture and Biotechnology Laboratory, Seibersdorf.

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Wagramer Strasse 5, P.O. Box 100,
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Printed by the IAEA in Austria,
July 2008

08-XXXXX