



**JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEX COMMITTEE ON RESIDUES OF VETERINARY DRUGS IN FOODS**

Twentieth Session

San Juan, Puerto Rico, 7-11 May 2012

MATTERS ARISING FROM FAO/WHO

**ACTIVITIES OF THE JOINT FAO/IAEA DIVISION OF NUCLEAR TECHNIQUES IN FOOD
AND AGRICULTURE RELEVANT TO CODEX WORK¹**

1. For almost 50 years, the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (the Joint Division) has uniquely promoted the mandates of both FAO, in its efforts to eliminate world hunger and reduce poverty through sustainable agricultural and rural development, improved nutrition and food security, and the International Atomic Energy Agency (IAEA), through peaceful uses of atomic energy to accelerate and expand the contributions of nuclear technologies to promote global health and prosperity.
2. The mission of the Joint Division is to strengthen capacities for the use of nuclear techniques for sustainable food security and to disseminate these techniques through international activities in research, training and outreach in its Member States. The Joint Division consists of five sections on food and environmental protection, soil and water management, plant breeding and genetics, animal production and health, and insect pest control.
3. The Joint Division will continue to strengthen its joint efforts with sister divisions in FAO Headquarters to improve food safety, protect consumer health and facilitate international agricultural trade by providing 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. The activities related to the work of Codex are the use of ionizing radiation, the control of food contaminants, and the management of nuclear and radiological emergencies affecting food and agriculture.

**COORDINATED RESEARCH PROJECT ON THE DEVELOPMENT OF RADIOMETRIC AND ALLIED
ANALYTICAL METHODS TO STRENGTHEN NATIONAL RESIDUE CONTROL PROGRAMS FOR ANTIBIOTIC
AND ANTHELMINTIC VETERINARY DRUG RESIDUES**

4. The IAEA encourages and assists the development of research on uses of nuclear techniques 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 both the FAO and IAEA mandates.
5. In this regard, the on-going CRP on the Development of Radiometric and Allied Analytical Methods to Strengthen National Residue Control Programs for Antibiotic and Anthelmintic Veterinary Drug Residues held its second Research Coordination Meeting (RCM) in Kandy, Sri-Lanka from 4-18 March 2011. The meeting was attended by participants from Brazil, China, Kenya, Republic of Korea, Mongolia, Peru, Sri Lanka, Thailand and Tunisia. Experts from Austria, Belgium, Germany, the Netherlands, and the United Kingdom also provided scientific and technical support to the participants.

¹ Document prepared by and under responsibility of the Joint FAO/IAEA Division on Nuclear Techniques in Food and Agriculture, IAEA Headquarters, Vienna, Austria.

6. The main purpose of the CRP is to assist National Reference Laboratories of FAO and IAEA Member States in meeting the need for effective and appropriate monitoring methods for residues of selected antibiotic and anthelmintic veterinary medicines through the development and application of screening methods that exploit the advantages (robustness, sensitivity, transferability) of radiotracer detection methods, in conjunction with confirmatory techniques using stable-isotope labelled molecules. The project is also investigating sources of natural antimicrobial compounds likely to impact the regulatory framework for veterinary drug residues and in this respect, the natural occurrence of the prohibited antibiotic chloramphenicol in plant material has already been demonstrated.²

7. This CRP forms a unique and global network of scientific expertise addressing complex and important food safety challenges and its successful implementation will result in improved food and feed quality and safety in FAO/IAEA Member States and further help developing countries to access major global food markets. Research results from the participants will assist regulators in the development of new guidelines and regulations pertaining to food safety and the environmental impact of veterinary drugs. All the methods developed and validated by the CRP will be made available through publications and on the Food and Environmental Protection Subprogramme web pages, including the newly developed database for Food Contamination and Residue Information System (FCRIS).

COORDINATED RESEARCH PROJECT ON THE IMPLEMENTATION OF NUCLEAR TECHNIQUES TO IMPROVE FOOD TRACEABILITY

8. Producing safe and high quality food is a prerequisite to ensure consumer health and successful domestic and international trade, and is critical to the sustainable development of national agricultural resources. Traceability systems play a key role in assuring food safety. Analytical techniques that enable the provenance of food to be determined provide an independent means of verifying “paper” traceability systems and also help to prove authenticity, to combat fraudulent practices, and to control adulteration, which are important issues for economic, religious or cultural reasons.

9. In this regard, a new CRP on the Implementation of Nuclear Techniques to Improve Food Traceability held the first RCM³ in Vienna, Austria, from 16-19 May 2011. The meeting was attended by research contract and agreement holders from Austria, Botswana, Chile, China, India, Lebanon, Portugal, Singapore, Thailand, Uganda, UK, USA, and observers from France, Sweden, USA, FAO, IAEA and UNIDO.

10. The CRP addresses some of the challenges that developing countries are facing in ensuring food traceability. In particular, it intends to help laboratories in Member States to establish robust analytical techniques to determine provenance of food through the assessment of the isotopic and elemental composition of foodstuffs using an integrated and multidisciplinary approach. The immediate benefit to laboratories will be the implementation and application of state-of-the-art nuclear measurement techniques to determine the provenance of foodstuffs. Fraud involving the redirection of consignments contaminated with veterinary drug residues is also an area of concern, e.g. honey and shrimp containing residues of prohibited antibiotics. Techniques developed in this CRP will complement analytical methods to detect residues and contaminants in foods within holistic food safety systems.

QUALITY CONTROL OF TRYPANOCIDAL DRUGS

11. African trypanosomiasis is a severe disease which is fatal if left untreated. The conventional and most common method to combat trypanosomiasis is by chemotherapy. It is known that there is widespread marketing and use of counterfeit and poor quality isometamidium and diminazene based trypanocidal drugs in sub-Saharan Africa. This has severe implications for both animal health and food safety, posing problems with residues of unspecified, unwanted chemicals and their metabolites in the food chain and the induction of trypanosome resistance, an already widespread phenomenon.

12. The Animal Health Service of the FAO and the International Federation for Animal Health (IFAH) signed in July 2008 a Memorandum of Understanding to address these issues. The FAO Animal Health Service, in partnership with the Joint Division and IFAH, cooperate to develop standards and protocols for quality control/quality assurance for trypanocidal drugs and other classes of veterinary drugs, including

² Berendsen, Bjorn, Stolker, Linda, de Jong, Jacob, Nielen, Michel, Tserendorj, Enkhtuya, Sodnomdarjaa, Ruuraghas, Cannavan, Andrew and Elliott, Christopher. Evidence of natural occurrence of the banned antibiotic chloramphenicol in herbs and grass. Analytical and Bioanalytical Chemistry, April 2010, <http://dx.doi.org/10.1007/s00216-010-3724-6>.

³ <http://www-naweb.iaea.org/nafa/fep/crp/fep-improve-traceability.html>

insecticides, acaricides, anthelmintics and antibiotics. The United Nations Industrial Development Organisation (UNIDO), the Global Alliance for Livestock Veterinary Medicines (GALVmed) and Strathclyde University (working closely with Manchester Metropolitan University) are also associated with this initiative.

13. The purpose of the Project is to provide validated protocols for drug quality control to the relevant regulatory bodies in countries where these drugs are used, and also to transfer the technological knowledge to sub-Saharan African laboratories. The establishment of standards and protocols for drug quality assessment will allow pharmaceutical companies and laboratories, including local/small companies in African and in other developing countries throughout the world, to market and compete on an equal basis following internationally agreed quality control/quality assurance protocols.

14. The FAO/IAEA Food and Environmental Protection Laboratory is currently collaborating with Strathclyde University in the elaboration and validation of standard methods for the quality control of isometamidium, diminazene and homidium formulations and the elaboration of monographs for the available authentic formulations and the pure compounds. The quality control methods will soon be transferred to reference laboratories in Africa. The process of selecting two laboratories in sub-Saharan Africa to carry out tests for quality control and verification of products against chosen pharmaceutical standards is in advanced stages as of April 2012. The Joint Division and Strathclyde University (with Manchester Metropolitan University), in partnership with IFAH, UNIDO, and GALVmed, will provide training and guidance to these laboratories.

FAO AND IAEA TECHNICAL COOPERATION PROJECTS – RESIDUES OF VETERINARY DRUGS IN FOODS

15. The Food and Environmental Protection Subprogramme is responsible for providing scientific and technical support for over 40 national and regional FAO and IAEA Technical Cooperation (TC) Projects, including several associated with veterinary drug residues (see Table 1). These projects provide recipient countries with equipment, expert advice and training, and are financed by both the FAO and IAEA Technical Cooperation Programmes and through trust funds provided by donor countries and international funding agencies.

NEW WEB APPLICATION ON FOOD CONTAMINANTS

16. Access to analytical methods continues to be a problem in many developing country Member States, especially in the form of validated method protocols. To help address this problem, the Joint Division has collaborated with the Codex Committee on Residues of Veterinary Drugs in Foods in publishing analytical methods made available by National Authorities on its web pages.

17. With reference to 19th CCRVDF discussions on matters arising from the Joint Division⁴, including participation in the electronic working group deliberations concerning the validation of multi-residue methods of analysis for residues of veterinary drugs in foods⁵, a new Food Contaminant and Residue Information System (FCRIS) web application, which is currently being created and revised on the basis of the existing Joint Division's INFOCRIS database (<http://www-infocris.iaea.org/EN/default.htm>), is a compendium of certain contaminants in foods and a user-friendly platform that facilitates the uploading of new information.⁶

18. Some of the methods have been developed through activities of the Joint Division, while many others are linked to the United States Department of Agriculture/Food Safety Inspection Service (USDA/FSIS) webpages. Additional methods will soon be obtained from the United Kingdom and Canada. The FCRIS database will accommodate both multi-residue analytical methods as well as single analyte methods for the benefit of member states. The methods will enhance capabilities of developing countries and strengthen residue monitoring plans.⁷

⁴ REP11/RVDF, paragraphs 27-30.

⁵ REP11/RVDF, paragraphs 50-67.

⁶ A presentation on the new FCRIS database will be conducted at lunch break on Tuesday, 8 May 2012.

⁷ Also see document CX/RVDF 12/20/10, Agenda Item 8b, for additional details.

TABLE 1

SELECTED TECHNICAL COOPERATION PROJECTS RELATED TO RESIDUES OF VETERINARY DRUGS IN FOODS

Country	Year	Title
Angola	2012	Enhancing Veterinary Laboratories for the Quality Control of Local Milk Production to Improve Public Health Checks
Bangladesh	2009	Establishing a Veterinary Drug Residue Laboratory
Benin	2012	Establishing Enhanced Analytical Capability to Comply with International Standards for the Evaluation and Control of Veterinary Drug Residues in Food of Animal Origin
Botswana	2012	Establishing a Laboratory for Monitoring Residues of Veterinary Drugs in Food of Animal Origin to Protect Public Health and Enhance International Trade Through Utilization of Nuclear and Related Analytical Techniques
Chile	2012	Determining Veterinary Residues and Contaminants in Agricultural and Animal Products for Human Consumption
Indonesia	2012	Supporting the National Mycotoxins Reduction Programme and Enhancing the National Reference Laboratory of the Indonesian Research Centre for Veterinary Science (BBALITVET)
Mongolia	2012	Enhancing Analytical Equipment for Animal Disease Prevention, Diagnosis and Surveillance
Nicaragua	2012	Improving Technical Capabilities for the Detection of Diseases and Residues in Agriculture
Nigeria	2012	Applying Nuclear and Related Techniques to Characterise Chemical Contaminants in Food for Risk Assessment and Management of Toxic Pollutants and Residues in Food, Feedstock and Water Resources through Training of Analytical Scientists
Pakistan	2012	Strengthening Capabilities to Monitor and Control Veterinary Drug Residues in Foodstuffs
Panama	2012	Enhancing Analytical Capability to Evaluate and Control Use of Veterinary Drugs through Residue Monitoring and Diagnostic Toxicology
Sudan	2012	Establishing a Laboratory for Monitoring Veterinary Drug Residues and Prohibited Substances in Livestock and Livestock Products through Application of Nuclear and Related Techniques to Protect Public Health.
African (regional)	2012	Establishing a Food Safety Network through the Application of Nuclear and Related Technologies.
Latin America (regional)	2009	Harmonizing Official Control Laboratories to Analyse Chemical Contaminants in Food and Feedstuffs
Latin America (regional)	2012	Establishing a South American Regional Network of National and Reference Laboratories for Pharmacologically Active Substances and Contaminants in Food of Animal Origin