



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

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

1. The Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (the Joint Division) will celebrate its 50th year of providing support to FAO and International Atomic Energy Agency (IAEA) member states to improve agricultural production and food security. This is based on a unique and diverse nature of a group of subprogrammes and attendant laboratories relevant to all aspects of agriculture, the ability to conduct applied transferable research and the application of nuclear technologies to promote global health and prosperity.
2. Through the Food and Environmental Protection (FEP) subprogramme, the Joint Division supports member states by way of Coordinated Research Projects and Technical Cooperation Projects relevant to Codex work such as use of ionizing radiation, the control of food contaminants, food traceability, and the management of food/agriculture related nuclear and radiological emergencies. The Joint Division is also working with sister FAO Divisions in Rome to address food/feed safety/quality and reduce food/feed losses/waste through current and prospective programs and in line with a number of FAO strategic objectives.

COORDINATED RESEARCH PROJECTS

3. A five year coordinated research project on Developing Radiometric and Allied Analytical Methods to Strengthen National Residue Control programs for Antibiotic and Veterinary Anthelmintic Drug Residues, that brings together fifteen developing and developed member states, held its penultimate technical meeting² in Nairobi Kenya, from 3-7 September 2012. As noted in the report, this CRP has enhanced collaboration among food safety laboratories around the world while facilitating the exchange of knowledge on analytical methods for monitoring chemical contaminants, thereby providing a discussion platform for various scientists and laboratories working in residue monitoring worldwide.
4. This CRP recognizes the implications of decreasing analytical method detection limits (even far below 1 µg/kg level as technology advances) as a public health and trade concern. The CRP also acknowledges the need for fundamental discussions regarding substances/contaminants with zero tolerance levels. It is important to address what 'zero tolerance' actually means, whether it implies technically detectable or toxicologically relevant levels, especially when some member states continue to detect banned antimicrobials such as Chloramphenicol expressed as natural background levels³. The CRP also identifies the transfer of veterinary drugs from feed to animal to environment as an important issue worth evaluating.

¹ Document prepared by and under responsibility of the Joint FAO/IAEA Division on Nuclear Techniques in Food and Agriculture, IAEA Headquarters, Vienna, Austria (See <http://www.naweb.iaea.org/nafa/index.html> for additional details).

² Summary report of the 3rd Research Coordination Meeting (<http://www.naweb.iaea.org/nafa/fep/crp/3rd-RCM-Report.pdf>).

³ Occurrence of Chloramphenicol in Crops through Natural Production by Bacteria in Soil (<http://pubs.acs.org/doi/abs/10.1021/jf400570c>).

5. Traceability studies are a focus of the Joint Division and outputs are expected to support various CODEX texts such as the Codex Standard for Honey (CODEX STAN 12-1981). An ongoing CRP is researching the implementation of Nuclear Techniques to Improve Food Traceability, playing a key role in assuring food safety, proving authenticity, helping combat fraudulent practices, and controlling adulteration. In acknowledging the growing global importance of aquaculture as an important source of protein for human consumption, the Joint Division will also initiate a new five-year CRP on the Development and Strengthening of Radio-Analytical and Complimentary Techniques to Control Residues of Veterinary Drugs and Related Chemicals in Aquaculture Products in 2014. This is expected to bring together no less than fifteen research and development food safety institutions/laboratories in developing and developed member states.

QUALITY CONTROL OF TRYPANOCIDAL DRUGS

6. Tsetse-transmitted African animal trypanosomosis is arguably the most important animal disease impairing livestock agricultural development in sub-Saharan Africa. Besides vector control, the use of trypanocidal drugs is the main method to control the impact of the disease on animal health and production in most sub-Saharan African countries. Presently only three compounds belonging to two chemical classes are widely available to treat trypanosomosis, namely, aromatic diamidines (e.g. diminazene aceturate) and phenanthridinium (e.g. isometamidium chloride hydrochloride and homidium chloride/bromide).

7. Studies and market surveys have revealed some sub-standard quality or even fake trypanocidal pharmaceutical formulations sold in sub-Saharan Africa. This presents severe negative implications, including trypanocidal drug resistance as reported by seventeen African countries, and compromised food safety due to unspecified and potentially harmful chemicals in the food chain. Unfortunately, no internationally agreed standards for the quality control of these compounds exist, rendering it impossible to establish independent quality control and quality assurance standards. An international alliance was set up to help address this problem. The alliance includes FAO, IFAH, GALVmed, IAEA and Manchester Metropolitan University (MMU).

8. Analytical methods have been developed and validated by MMU and FEP and pharmacopoeia-type monographs for isometamidium chloride hydrochloride, diminazene aceturate, homidium chloride and homidium bromide prepared and submitted for publication through OIE as a first step in their acceptance as international standards. The knowledge and analytical procedures developed for the quality control and quality assurance of trypanocidal drugs are being transferred to two laboratories in sub-Saharan Africa, the Laboratoire de Contrôle des Médicaments Vétérinaires (LACOMEV), Dakar, Senegal and the Tanzania Food and Drugs Authority (TFDA) laboratory, Dar es Salaam. These laboratories will form the basis of a system to enable reliable quality control for use by drug registration authorities. Five staff from these laboratories trained in January 2013 at the Joint Division's Food and Environmental Protection Laboratory and initial implementation of the methods is now under way in Senegal and Tanzania.

9. The monographs developed through this alliance and the supporting analytical methodology will ultimately allow quality control of these trypanocidal drugs in many FAO/IAEA member states in Africa and beyond as well as veterinary pharmaceutical companies on a common platform. This and subsequent data generated would be useful if trypanocide residue studies and control become an important focus of CODEX members.

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

10. The Joint Division provides scientific and technical support for over 40 national and regional FAO and IAEA Technical Cooperation (TC) Projects related to food safety and CCRVDF in particular, including several associated with veterinary drug residues and related contaminants⁴. These projects provide recipient countries with equipment, expert advice and training, and are financed by FAO, the IAEA TC program as well as through IAEA trust funds provided by donor countries and international funding agencies. Technologies developed in CRPs are transferred to member states through Fellowship and Scientific Visit programs under the TCPs as well as collaborative studies among various member states e.g. China-

⁴ (<http://www-naweb.iaea.org/nafa/fep/field-projects-fep.html>)

Botswana, the Netherlands-Mongolia, Brazil-Angola, RSK-Mongolia and UK-Kenya/Brazil. In the same regard, the Joint Division supports developing and strengthening strategic regional networks in Latin America, Africa and Asia, bringing together various stakeholders as well as strengthening regional expertise to support a *'help-thy-neighbour'* approach. Food safety regional centres of excellence are also being promoted.

11. Through its TCPs and CRPs, the Joint Division helps member states overcome lingering challenges of accessing/procuring/delivery of laboratory instrumentation and consumables. The Division also works closely with industry supplying such instrumentation to address challenges of instrument maintenance/service (often financially prohibitive) for better and sustainable residue monitoring programs, and supports (through TCPs and extra-budgetary assistance such as the IAEA Peaceful Uses Initiative) growing interest in Total Diet Studies with focus on evaluating the risk of exposure to multiple chemical contaminants in table-ready foods. The Joint Division also promotes South-South corporation to enhance capacity building in various disciplines including resource sharing and technology transfer.

SUPPORTING ANALYTICAL METHODS OF ANALYSIS FOR FOOD CONTAMINANTS

12. The Joint Division continues to inform member states (regulators and food safety laboratories) on the benefits of using Codex guidelines for their national residues monitoring programs and the use of a Food Contaminant and Residue Information System (FCRIS) hosted on its website⁵. This database managed by the FEP subprogram supports CAC/GL 71-2009 and the working group on methods of analysis for veterinary drug residues (and related pesticides) in food and feed with support from the CODEX secretariat and some member states committed to contributing analytical methods to the database⁶. In this regard, the Joint Division also supports sister Codex committees with similar initiatives such as the Codex Committee on Pesticide Residues⁷.

⁵ Food Contaminant and Residue Information System (FCRIS) (<http://nucleus.iaea.org/fcris/>)

⁶ REP12/RVDF, paragraphs 12, 91, 95-96.

⁷ REP12/PR, paragraph 12.