



**Food and Agriculture
Organization of
the United Nations**



**World Health
Organization**

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Agenda Item 4(b)

**CX/PR 14/46/4
March 2014**

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON PESTICIDE RESIDUES

46th Session

Nanjing, P.R. China, 5 - 10 May 2014

MATTERS OF INTEREST ARISING FROM OTHER INTERNATIONAL ORGANIZATIONS

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

1. In celebrating half a century of fruitful collaboration between the Food and Agriculture Organization (FAO) of the United Nations and the International Atomic Energy Agency (IAEA), the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (the Joint Division) continues to champion the goals of both the IAEA, to accelerate and expand the contributions of nuclear technologies to promote global health and prosperity, and the FAO in its efforts to eliminate world hunger and reduce poverty through sustainable agricultural and rural development, improved nutrition and food safety and security.

2. The mission of the Joint Division is to strengthen capacities in the use of nuclear and complimentary techniques to help ensure sustainable food security/safety and to disseminate these techniques through international activities in research, training and outreach to its Member States. The Joint Division consists of five sections; working in the areas of food and environmental protection, soil and water management, plant breeding and genetics, animal production and health, and insect pest control.

3. The Joint Division continues to strengthen its collaboration with sister Divisions in FAO Headquarters to improve food safety, protect consumer health and facilitate international agricultural trade by providing assistance, coordinating and supporting research, providing technical and advisory services, providing laboratory support and training, and collecting, analyzing and disseminating information. The activities most closely related to the work of Codex are nuclear and isotopic analytical methods to monitor food contaminants and trace and authenticate food products, the use of irradiation for the control of food contaminants, and the management of nuclear and radiological emergencies affecting food and agriculture.

A WEB APPLICATION ON FOOD CONTAMINANTS²

4. Accessing analytical methods remains a problem to many developing country Member States, especially in the form of validated method protocols. To help address this problem, the Joint Division supports the Codex Committee on Pesticide Residues in foods by publishing analytical methods online, freely available over the internet. These methods are provided mainly by National Authorities and are published on the Food Contaminant and Residue Information System (FCRIS), accessible through <http://nucleus.iaea.org/fcris/>. The FCRIS resource contains information on analytical techniques for the detection of food contaminants such as pesticide and veterinary drug residues. As regards crop matrix analyses and pesticides, the Pesticide Residue Methods (PRM) database thus far contains several commonly used multi-residue methods, pesticide class specific methods and single pesticide residue methods otherwise referred to as enforcement methods. Since the methods contain detailed protocols, they can be adapted in most laboratories to address specific needs of the Member States.

5. An example of the general PRM database is displayed in Figure 1 with a more detailed PRM record in Figure 2. The first page of an actual method displayed on clicking the "SOP" link is shown in Figure 3. FCRIS also includes the Pesticide Attributes Database (PAD), a resource for physicochemical/toxicological data that contains information of relevance to food safety/environmental laboratories. Links to other international pesticide databases are included which provide significant details about the physical and chemical properties, toxicity and environmental fate and effects, etc. Snap shots of the information accessible through the data base are shown in Figures 4 and 5.

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

² This section is presented in relation to discussions held at the 36th Session of the Joint FAO/WHO Codex Alimentarius Commission (REP13/CAC, paragraphs 138-141) concerning the Recommended Methods of Analysis for Pesticide Residues (CODEX STAN 229-1993).

6. User demand for the methods is high, especially from developing Member States. We therefore welcome the submission of additional analytical protocols from Codex members and observers through the FCRIS database. Relevant information on related topics, such as accessing certified reference materials, is also welcome. Pesticide registrants are also encouraged to share their enforcement methods with Member States through the same database.

7. With regard to the CCPR Discussion Paper on Performance Criteria for Suitability Assessment of Methods of Analysis for Pesticide Residues (Agenda Item 9, REP13/CAC, paragraphs 138-141), the Joint Division is willing to continue supporting CCPR and related Codex Committees by obtaining, hosting and making available analytical methods to Member State laboratories to support their efforts to monitor pesticide residues in foods. The Joint Division is also available to offer assistance in the preparation of a document on performance criteria specific to methods for determination of pesticide residues in food products, including participation in respective working groups.

FAO AND IAEA COORDINATED RESEARCH AND TECHNICAL COOPERATION PROJECTS – PESTICIDE RESIDUES IN FOODS

8. The IAEA encourages and assists research and development on the uses of nuclear and related techniques and fosters the exchange of scientific and technical information. Certain activities are designed to stimulate and coordinate research by scientists in IAEA Member States in selected fields related to nuclear techniques. These research activities are normally implemented through Coordinated Research Projects (CRPs) which unite research institutes in both developing and developed Member States to collaborate on a theme of interest. The objective of the research is to produce outputs that can be applied downstream through capacity building Technical Cooperation Projects in Member States. For example, a recent CRP “Integrated Analytical Approaches to Assess Indicators of the Effectiveness of Pesticide Management Practices at the Catchment Scale” has produced guidelines for sampling and analysis of pesticide residues in foods that can be applied through TCPs aimed at supporting food safety/security and sustainable development through Good Agricultural Practices in Member States such as in Latin America and the Caribbean. Such generic guidelines enhance harmonized laboratory techniques and approaches as well as laboratory networking. The outcomes of this CRP are being compiled into a book to be published in 2015 with the aim of strengthening stakeholder roles in ensuring the prudent use of pesticides in agriculture.

9. The Joint Division will host an **International Symposium on Food Safety and Quality: Applications of Nuclear and Related Techniques** at the IAEA Headquarters in Vienna, Austria, from 10 - 13 November 2014. The symposium will cover a wide range of topics involving nuclear and complementary techniques in food and agriculture including food irradiation, residue analysis, food authentication, traceability and contaminant control and will include related issues such as climate change, emerging opportunities and threats to the integrity of the food supply, chemometrics and guidelines for consumer protection and international trade. The event will provide a forum for interdisciplinary networking and the Joint Division extends its warm invitation to scientists, laboratory analysts, policymakers, regulators, food producers and others concerned with food safety and quality to participate in the symposium. More information on the symposium is available online at <http://www-pub.iaea.org/iaeameetings/46092/Food-Safety-and-Quality>.

10. The Food and Environmental Protection Sub-programme continues to provide scientific and technical support for over 40 national and regional FAO and IAEA TCPs, a number of which are associated with pesticides and related food chemical contaminants (see Table 1). Relevant training/stakeholder workshops are also conducted as components of these projects.

TABLE 1 SELECTED CURRENT TECHNICAL COOPERATION PROJECTS ON/RELATED TO PESTICIDE RESIDUES IN FOODS³

Country	Title
Belize	Supporting Sustainable Capacity Building through Distance Learning for Laboratory Personnel of the National Agricultural Health Authority; Providing Technical Assistance and Training for Upgrading National Laboratory Capacity
Benin	Monitoring Safe Food Supply through Total Diet Studies and the Application of Nuclear and Complementary Analytical Techniques
Central African Republic	Enhancing Laboratory Capacity to Control Chemical and Bacteriological Hazards in Foodstuffs of Animal Origin
China	Building Technological Capacity for Food Traceability and Testing of Pesticide Residues in Food
Costa Rica	Strengthening of Good Agricultural Practices for Food Safety/Security and Environmental Protection; Enhancing the Capacity to Control Contaminants and Residues of Veterinary Medicines and Pesticides in Foodstuffs of Animal Origin Using Nuclear and Conventional Analytical Techniques
Ecuador	Improving Food Security and Environmental Sustainability by Monitoring Wetlands as Indicators of Good Agricultural Practice in Palm Oil Production
Mongolia	Enhancing Analytical Equipment for Animal Disease Prevention, Diagnosis and Surveillance (MON5019)
Morocco	Improving Veterinary Drug Residue Detection and Animal Disease Diagnosis with Nuclear and Molecular Techniques (MOR5034)
Namibia	Assessing the Spatial Distribution of Lead, Cadmium and Selected Pesticide Residues in Livestock Farming
Oman	Strengthening National Capabilities in Food Safety and Food Traceability
Pakistan	Strengthening Capabilities to Monitor and Control Veterinary Drug Residues in Foodstuffs
Panama	Determining Pesticides and Inorganic Pollutants in Vegetables and Studying the Adsorption and Migration Through Nuclear Technologies in Zones of High Pollution Incidents to Guarantee Safe Food for Consumers
Paraguay	Strengthening the National Network of Laboratories Involved in Chemical Risk Analysis to Ensure Food Safety Through the Use of Nuclear and Complementary Non-Nuclear Techniques
Uganda	Strengthening National Capacity for Testing and Monitoring of Drug Residues in Animal Feeds and Animal Products
African (regional)	Establishing a Food Safety Network through the Application of Nuclear and Related Technologies
Asia (regional)	Building Technological Capacity for Food Traceability and Food Safety Control Systems through the Use of Nuclear Analytical Techniques; Implementing Best Practices of Food Irradiation for Sanitary and Phytosanitary Purposes; Strengthening Adaptive Climate Change Strategies for Food Security through the use of Food Irradiation (RCA)
Latin America (regional)	Harmonizing and Validating Analytical Methods to Monitor the Risk of Chemical Residues and Contaminants in Foods to Human Health (ARCAL CXXVIII); Supporting Quality Management for the Assessment and Mitigation of Impacts of Contaminants on Agricultural Products and in the Environment (ARCAL CXXIV); Improving Agricultural Production Systems Through Resource Use Efficiency (ARCAL CXXXVI); Developing Indicators to Determine the Effect of Pesticides, Heavy Metals and Emerging Contaminants on Continental Aquatic Ecosystems Important to Agriculture and Agroindustry (ARCAL CXXXIX)

IAEA > NUCLEUS > FCRIS > Pesticide Methods Database

Pesticide Residue Methods

Food Contaminant and Residue Information System

FCRIS Home

Veterinary Drug Residues Methods Homepage

Veterinary Drug Residues Methods Database

Submit a Veterinary Drug Residues Method

Link to Veterinary Substances Database (VSDB)*

Pesticide Attributes Database

Pesticide Methods Homepage

Pesticide Methods Database

Submit a Pesticide Residue Method

Emergency Response Homepage

Substance Group	Class	Method Title	Method Source	Date
Others	Pesticide Specific Enforcement Method, Cyfluthrin	An Analytical Method for Determination of Cyfluthrin and beta-Cyfluthrin Residues in Various Crops	U.S. EPA	1998/07/15
Others	Pesticide Specific Enforcement Method, Buprofezin	An Analytical Method for the Determination of Residues of Buprofezin at Estimated Tolerance Levels in Almonds, Cottonseed, Citrus (Lemons), and Grapes by Gas Chromatography Using Nitrogen Phosphorus Detection	IR-4	1997/07/21
Others	Halogenated Organic	Analysis and Confirmation for Ethylene Dibromide in Animal Tissue by Codistillation	USDA-FSIS	1991/07/01
Others	Multi-Residue Method	Analysis of Multiresidue Pesticides from Food Using the QuEChERS Sample Preparation Approach, LC MS MS and GC MS Analysis by Monika Kansal, A. Carl Sanchez, Art Dixon, Sueki Leung and Erica Pike, Phenomenex Inc., Torrance, California, USA.	www.sepscience.com	2014/01/01
Others	Pesticide Specific Enforcement Method, Chlorpropham	Analytical Method for Magnitude of Residues in Stored Potatoes from Postharvest Treatments of Chlorpropham	EPA	1994/08/11

Resources

Elearning

Slide Shows

eArticles

Methods for pesticide residue analysis available to the CODEX committee for pesticide residues (CCPR)

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Figure 1 - General view of the Pesticide Residue Methods database

Category	Others
Class Name	Multi-Residue Method
Method Title	Analysis of Multiresidue Pesticides from Food Using the QuEChERS Sample Preparation Approach, LC MS MS and GC MS Analysis by Monika Kansal, A. Carl Sanchez, Art Dixon, Sueki Leung and Erica Pike, Phenomenex Inc., Torrance, California, USA.
Method Date	2014/01/01
Method Type	Screening
Scope and Application	Adaptation of QuEChERS method for crop and vegetable matrices. Should be easily applicable to all vegetable and crop matrix analyses. LC MS MS and GC MS MS.
Method Summary	Analysis of food products is challenging due to the variety and complexity of both the matrices and the compounds of interest. Sample preparation and downstream analysis require careful consideration to ensure method robustness as well as accurate and precise quantification. In this study we explore the analysis of multiple pesticide residues in spinach samples. This article will walk through the step by step process of developing the analytical method, from sample preparation to analysis, best suited to the data requirements.
Applicable Concentration Range	See method
QC Requirements	See method
Method Performance/Validation	See Method
Method Source	www.sepscience.com
Method SOP	SOP
Citation	Analysis of Multiresidue Pesticides from Food Using the QuEChERS Sample Preparation Approach, LC MS MS and GC MS Analysis by Monika Kansal, A. Carl Sanchez, Art Dixon, Sueki Leung and Erica Pike, Phenomenex Inc., Torrance, California, USA., www.sepscience.com

Figure 2 – Summary page for a Pesticide Residue Method in the database

Analysis of Multiresidue Pesticides from Food Using the QuEChERS Sample Preparation Approach, LC-MS-MS and GC-MS Analysis

by Monika Kansal, A. Carl Sanchez, Art Dixon, Sueki Leung and Erica Pike, Phenomenex Inc., Torrance, California, USA.

Analysis of food products is challenging due to the variety and complexity of both the matrices and the compounds of interest. Sample preparation and downstream analysis require careful consideration to ensure method robustness as well as accurate and precise quantification. In this study we explore the analysis of multiple pesticide residues in spinach samples. This article will walk through the step-by-step process of developing the analytical method, from sample preparation to analysis, best suited to the data requirements.

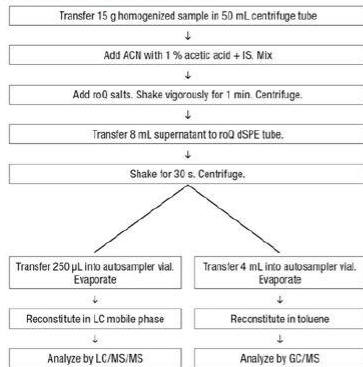


Figure 1: Flow chart summary for AOAC 2007.01 QuEChERS method.

Figure 3 – First page for an actual Pesticide Residue Method available on the database

Pesticide Database

Search by Substance Name or CAS RN

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Name	CAS Number	PPDB* Link
001 Compendium of Pesticides, Alan Wood		PPDB
002 Pesticide Action Network Pesticide Database		PPDB
003 Pesticide Properties Database, The University of Hertfordshire		PPDB
004 Purdue University National Pesticide Information Retrieval System (NPIRS) Searchable Databases		PPDB
005 Oregon State University National Pesticide Information Center		PPDB
006 Codex MRL Database		PPDB
007 USDA FAS MRL Database		PPDB
010 CDMS Pesticide Material Safety Data Sheet (MSDS) in the US		PPDB
1,3-dichloropropene	542-75-6	PPDB
2,3,6-TBA	50-31-7	PPDB
2,4,5-T	93-76-5	PPDB
2,4-D	94-75-7	PPDB
2,4-DB	94-82-6	PPDB
2-phenylphenol	90-43-7	PPDB

Figure 4 –Pesticide Attributes Database view

Dimethomorph - Identification, toxicity, use, water pollution potential, ecological toxicity and regulatory information

Note: See [Working with the Information on this Page](#) section below for important notes about this data.

This database and website are updated and enhanced by [Pesticide Action Network North America](#) (PANNA). The project is made possible by our [Sponsors](#) and by PANNA general funds. We need your support to maintain and improve this system. Please support the database and website — [donate to PANNA](#).

Chemical ID	Identifying information, including synonyms, ID numbers, use type, chemical classification, a link to a list of all products containing this chemical and a list of the top crops this pesticide is used on in California.
Poisoning Symptoms	Signs and symptoms of poisoning, first aid, and links to treatment information for this chemical.
Toxicity	Link to information on toxicity to humans, including carcinogenicity, reproductive and developmental toxicity, neurotoxicity, and acute toxicity.
Regulatory	Links to world-wide registration status as well as regulatory information for the U.S. and California.
Water	Water quality standards and physical properties affecting water contamination potential.
Ecotoxicity	Toxicity to aquatic organisms.
Related Chems	List of chemicals in the same family, including breakdown products, salts, esters, isomers, and other derivatives.

Chemical Identification and Use for Dimethomorph [Top](#) ↑

Basic Identification Information About This Chemical

Chemical Name:	Dimethomorph
CAS Number:	110488-70-5
U.S. EPA PC Code:	268800
CA DPR Chem Code:	4003
Molecular Weight:	375.9

Figure 5 –Pesticide Attributes Database link to information on one of the outside databases. Clicking on each of the links will provide more detailed information on each topic.

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

UPDATE ON OECD WORK ON RESIDUE CHEMISTRY AND PESTICIDE MINOR USES RELEVANT TO CCPR WORK

Background

1. This document is provided to CCPR Delegates for information. It gives an update of OECD activities in the area of pesticide residue chemistry and minor uses. With respect to the latter, this document is part of the information exchange process between Codex and OECD recommended previously to avoid duplication and overlap between international groups dealing with the issue of minor uses. OECD has an observer status within Codex.

2. The two OECD groups dealing with residue chemistry and minor uses are the Residue Chemistry Expert Group and the Expert Group on Minor Uses. An overview of recent activities within the two groups is given below, following a brief summary of OECD work on pesticides.

About the OECD work on Pesticides

3. The Pesticide Programme was created in 1992 within the OECD's Environmental Health and Safety division to help OECD countries:

- harmonise their pesticide review procedures,
- share the work of evaluating pesticides, and
- reduce risks associated with pesticide use.

4. The Pesticide Programme is directed by the Working Group on Pesticides (WGP), composed primarily of Delegates from OECD Member countries, but also including representatives from the European Commission and other international organisations (e.g. United Nations Food and Agriculture Organization, United Nations Environment Programme, World Health Organization, EPPO), and experts from the pesticide industry and public interest organisations (NGOs).

OECD Residue Chemistry Expert Group

5. The Residue Chemistry Expert Group (RCEG) was established in 2003. Its objectives are to:

- Harmonise the way residue testing is conducted and results are interpreted,
- Develop methods to support international harmonisation of MRLs (the OECD does not set MRLs).

6. Nine OECD Test Guidelines have been published, as follows: **TG 501** Metabolism in Crops; **TG 502** Metabolism in Rotational Crops; **TG 503** Metabolism in Livestock; **TG 504** Residues in Rotational Crops (Limited Field Studies); **TG 505** Residues in Livestock; **TG 506** Stability of Pesticide Residues in Stored Commodities; **TG 507** Nature of Pesticide Residues in processed Commodities - High Temperature-Hydrolysis; **TG 508** Magnitude of Pesticide Residues in Processed Commodities; **TG 509** Crop Field Trial.

7. Seven Guidance Documents are available: Definition of Residue; Overview of Residue Chemistry Studies; Magnitude of Pesticide Residues in Processed Commodities; Pesticide Residue Analytical Methods; Crop Field Trials; and Residues in Livestock.

8. The Guidance Document on Residues in Livestock was updated in 2012/2013, the update being published on the 3rd September 2013. The revision includes an updated OECD Table of Feedstuffs Derived from Field Crops (available in the Guidance Document on Overview of Residue Chemistry Studies). Specifically, this Guidance Document describes current differences in OECD countries in livestock feeding practices and diet composition and factors influencing the determination of dietary burden and dose selection, and provides guidance for interpreting results from OECD TG 505 studies.

9. The MRL Calculator, a tool for statistical calculation of MRLs was published in 2011. It is an Excel spreadsheet simple to use without requiring extensive statistical knowledge from the user.

10. All the documents mentioned above and the MRL calculator are available on the OECD public web site:

<http://www.oecd.org/env/ehs/pesticides-biocides/publicationsonpesticideresidues.htm>

11. The following outputs are in preparation: revision of the Guidance Document on Crop Field Trials (to deal with proportionality issues, clarify sampling procedures and take into account national / Codex information on recent changes in crop groups) and development of a Rotational Crop Field Trial Guidance Document).

OECD Expert Group on Minor Uses

12. The Expert Group on Minor Uses (EGMU) was established in 2007. The current work plan of the OECD EGMU focuses on issues associated with cooperation, technical and policy activities with the aim of facilitating the development of data and registration of pesticides for minor uses. As with many OECD chemicals and pesticide projects, the EGMU works towards providing the infrastructure, guidance and tools for promoting the registration of pesticides for minor uses, including aspects of data requirements, data generation and opportunities for harmonization to make available data useful across countries. The OECD work focuses on developing tools for risk assessment and mechanisms to facilitate co-operation and work-sharing. For further information, see the OECD website: <http://www.oecd.org/env/ehs/pesticides-biocides/minoruses.htm>

13. Two Guidance Documents have been published: a Guidance Document on Defining Minor Uses of Pesticides and a Guidance Document on Regulatory Incentives for the Registration of Pesticide Minor Uses.

14. Two survey reports have been published: the Survey Results on Regulatory Incentives for the Registration of Pesticide Minor Uses and the Survey Results on Efficacy & Crop Safety Data Requirements and Guidelines for the Registration of Pesticide Minor Uses.

15. All OECD Minor Uses publications are available at:

<http://www.oecd.org/env/ehs/pesticides-biocides/publicationsonminorusesofpesticides.htm>

16. Currently, three main activities are underway, as follows.

- **Project 1:** *work towards developing a Guidance Document to address & solve minor uses:*

Responses to a questionnaire to collect information on existing national & regional processes and known data exchanges, distributed in June 2013, are being analysed and a report of the survey will be made available. A pilot data generation project (global residue/efficacy) is also being considered to be scheduled at a later stage after selection of an agreed commodity and pest/disease problem.

- **Project 2:** *Global Joint Reviews (GJRs) –enhancing minor uses from GJRs:*

Information on GJRs relevant for minor uses are being collated and further sources of information are being explored. The first aim of the work is to identify differences in uses (crops) approved in various countries through GJRs. Subsequent aims would involve identifying the reasons for these differences and activities or initiatives that could enhance the scope of minor uses approved amongst countries through GJRs.

- **Project 3:** *work towards developing a Guidance Document on the exchange and use of international efficacy & crop safety data for minor uses:*

A draft of the guidance document is being developed. While some OECD countries do not currently require efficacy data, it was confirmed as an important consideration amongst the EGMU participants.

17. The last EGMU meeting took place at OECD headquarters (Paris) on 11th October 2013. At this meeting the work plan for EGMU was updated to reflect progress in the ongoing projects outlined above, and to initiate related but new activities in the areas of identifying *priority* minor uses for data generation and data exchange and developing a process for assessing trial protocols for future minor use GJRs.