



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 CODEX 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 \(VSDR\) *](#)

[Pesticide Attributes Database](#)

[Pesticide Methods Homepage](#)

[Pesticide Methods Database](#)

[Submit a Pesticide Residue Method](#)

[Emergency Response Homepage](#)

Resources

[Elearning](#)

[Slide Shows](#)

[eArticles](#)

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

[Contact us](#)

Admin Maintenance

[Edit Main 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

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.

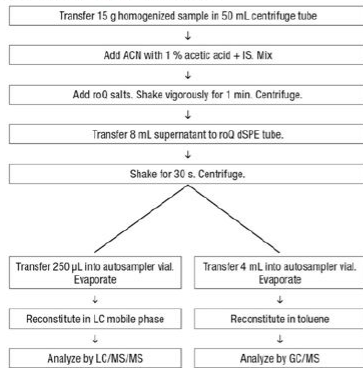


Figure 1: Flow chart summary for AOAC 2007.01 QuEChERS method.

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.