Food and Agriculture Organization of the United Nations

World Health Organization

EVALUATION 2019

PART I - RESIDUES

Pesticide Residues in Food

Joint FAO/WHO Meeting on Pesticide Residues

Pesticide Residues in Food 2019

Joint FAO/WHO Meeting on Pesticide Residues

Evaluation
Part I - Residues

Sponsored jointly by FAO and WHO Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group Gene, Geneva, Switzerland 17–26 September 2019

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Monographs containing summaries or residue data and toxicological data considered at the 2019 JMPR, together with recommendations, are available upon request from FAO or WHO under the title:
Pesticide residues in food 2019
Evaluations
Part I: Residues

DISCLAIMER OF THE JMPR

This monograph was written by experts based on the evaluation of the original studies and the dossier provided by the sponsor of the compound, of the relevant published scientific literature and the data submitted by Codex members. When found consistent with the data of the original study, the monograph may contain parts of the text and tables of the dossier submitted by the sponsor, but not the sponsor's conclusions. This represents an appropriate use of such material and does not represent an endorsement of the sponsors' position.

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** Evaluated within the periodic review programme of the Codex Committee on Pesticide Residues

List of participants

2019 Joint FAO/WHO Meeting on Pesticide Residues

Geneva, Switzerland, pre-meeting 12-16 September, and joint meeting 17–26 September 2018

Dr Julian Cudmore, Health & Safety Executive, York, the United Kingdom

Dr Michael Doherty, Office of Pesticide Programs, Health Effects Division, United States Environmental Protection Agency, Arlington, VA, USA.

Dr Jochen Heidler, Federal Institute for Risk Assessment, Department Pesticide Safety, Berlin, Germany

Mr Makoto Irie, Food and Agricultural Materials Inspection Centre, Office Plant Products Safety Division, Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries, Fukuoka, Japan

Dr Hidetaka Kobayashi, Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries, Chiyoda-ku, Tokyo, Japan.

Ms Monica Le, Pest Management Regulatory Agency, Health Canada, Ottawa, Ontario, Canada

Dr Mi-Gyung Lee, Dept. of Food Science & Biotechnology Andong National University, Gyeongsangbuk-do, Republic of Korea

Dr Dugald MacLachlan, Department of Agriculture, Canberra ACT, Australia

Dr Sam Margerison, Australian Pesticides and Veterinary Medicines Authority , Kingston ACT, Australia

Mr David Lunn, Plant, Food & Environment Directorate, Ministry for Primary Industries, Wellington, New Zealand.

Ms Karin Mahhieu, National Institute of Public Health and Environment, Centre for Nutrition, Prevention and Health Services (VPZ), Department of Food Safety, Bilthoven, The Netherlands

Ms Monique Thomas, Pest Management Regulatory Agency, Health Canada, Ottawa, Ontario, Canada

Dr Yukiko Yamada, Ministry of Agriculture, Forestry and Fisheries, Chiyoda-ku, Tokyo, Japan

Dr Guibiao Ye, Institute for the Control of Agrochemicals, Ministry of Agriculture and Rural Affairs, Maizidian 22, Chaoyang District, Beijing, People's Republic of China.

Secretariat:

Ms Emanuela Aquilini, Plant Production and Protection Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy *(FAO JMPR Secretariat)*

Mr Kevin Bodnaruk, West Pymble, NSW, Australia (*FAO Editor)*

Ms Gracia Brisco, Food Standards Officer, Joint FAO/WHO Food Standards Programme, Food and Agriculture Organization of the United Nations, Palais des Nations, Geneva, Switzerland

Ms Grazia Chiu, Plant Production and Protection Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy *(FAO JMPR Secretariat)*

Dr Jeevan Khurana, Lyneham, ACT, Australia (*FAO Editor*)

Ms Yong Zhen Yang, Plant Production and Protection Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy *(FAO JMPR Secretariat)*

ABBREVIATIONS and ACRONYMS

ADI	Acceptable Daily Intake
ADME	Absorption, distribution, metabolism and excretion
AR	Applied Radioactivity
ARfD	acute reference dose
BBCH	Biologische Bundesanstalt, Bundessortenamt Und Chemische Industrie
BMD	Benchmark dose
$BMDL_{10}$	Lower confidence limit on the benchmark dose for a 10% response
$BMDL_{20}$	Lower confidence limit on the benchmark dose for a 20% response
bw	body weight
CAN	Canada
CAS	Chemical Abstracts Service
CCPR	Codex Committee on Pesticide Residues
cGAP	Critical GAP
DALA	Days after Last Application
DALT	Days After Last Treatment
DAT	Days after Treatment
DM	dry matter
dSPE	Dispersive Solid Phase Extraction
DT_{50}	Time Required For 50% Dissipation of the Initial Concentration
DT_{90}	Time Required For 90% Dissipation of the Initial Concentration
Dw	dry weight
EFSA	European Food Safety Authority
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GAP	Good Agricultural Practice
GC-ECD	Gas Chromatography – Electron Capture Detector
GECDE	Global Estimate of Chronic Dietary Exposure
GC-FPD	Gas Chromatography – Flame Photometric Detector
GC-NPD	Gas Chromatography – Nitrogen Phosphorous Detector
GEMS	Global Environment Monitoring System – Food Contamination Monitoring and Assessment Programme
GLP	good laboratory practice
HPLC	High performance liquid chromatography
HR	Highest Residue Level in the Edible Portion of A Commodity
HR-P	Highest Residue Level in a Processed Commodity
IEDI	International Estimated Daily Intake

IESTI	International Estimate of Short-Term Dietary Intake
IUPAC	International Union of Pure and Applied Chemistry
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
JECFA	Joint FAO/WHO Expert Committee on Food Additives
JMPR	Joint FAO/WHO Meeting on Pesticide Residues
LC-MS/MS	Liquid Chromatography-Tandem Mass Spectrometry
LOAEL	lowest-observed-adverse-effect level
LOD	Limit of Detection
LOQ	Limit of Quantification
MOA	Mode of action
MRL	Maximum Residue Limit
OECD	Organisation for Economic Co-Operation and Development
PBI	plant-back interval
PES	Post Extraction Solid
Pf	Processing Factor
PHI	Pre-Harvest Interval
Po	Post-harvest
ppm	parts per million
RAC	Raw Agricultural Commodity
RTI	re-treatment interval
SC	suspension concentrate
SFO	Single first order model
SPE	Solid phase extraction
STMR	Supervised Trials Median Residue
STMR-P	Supervised Trials Median Residue in a processed commodity
T_{max}	time to reach maximum concentration
TRR	Total Radioactive Residues
TTC	threshold of toxicological concern
UK	United Kingdom
USA	United States of America
USEPA	USA Environmental Protection Agency
WHO	World Health Organisation

USE OF JMPR REPORTS AND EVALUATIONS BY REGISTRATION AUTHORITIES

Most of the summaries and evaluations contained in this report are based on unpublished proprietary data submitted for use by JMPR in making its assessments. A registration authority should not grant a registration on the basis of an evaluation unless it has first received authorisation for such use from the owner of the data submitted for the JMPR review or has received the data on which the summaries are based, either from the owner of the data or from a second party that has obtained permission from the owner of the data for this purpose.

INTRODUCTION

A Joint Meeting of the Food and Agriculture Organization of the United Nations (FAO) Panel of experts on Pesticide Residues in Food and the Environment and the World Health Organization (WHO) Core assessment Group on Pesticide Residues (JMPR) was held in Geneva, Switzerland, from 17 to 26 September 2019. The FAO Panel Members met in preparatory sessions from 12 to 16 September.

The WHO Director of Food Safety and Zoonoses, Dr Kazuaki Miyagishima, welcomed all the experts and colleagues from FAO. . Dr Miyagishima remarked that the Joint FAO/WHO Meeting on Pesticide Residues (JMPR) is an excellent example of how WHO and FAO can jointly mobilise some of the best expertise from around the world, in this case, in the interest of protecting public health from adverse effects of pesticide residues in food.

Dr Miyagishima reflected on the fact that the JMPR has met on an annual basis since 1963 to provide scientific advice to the Codex Alimentarius Commission and the Codex Committee on Pesticide Residues (CCPR).The high demand for scientific advice on pesticide residues had resulted in an extraordinary JMPR meeting earlier this year that was held in Ottawa in May. The ordinary JMPR meeting is now about to begin with a full agenda.

Dr Miyagishima appreciated the hard work of the experts prior to the meeting and intensive discussion and critical review during the meeting. This engagement assures that the scientific output from the meeting will meet the highest possible standard. This way of working is essential in maintaining the consistent high quality of the scientific advice provided by FAO and WHO to the Codex – and to the countries of the world. As a result, the advice from the JMPR is respected and widely used around the world through application of Codex standards for food in international trade and directly by national authorities.

On behalf of WHO and FAO, Dr Miyagishima conveyed a deep appreciation for the efforts and commitment to the JMPR by the experts. Without these expert inputs, the organisations would not be able to deliver this necessary expert advice and – consequently – the safety of food around the world would suffer. Finally, Dr Miyagishima wished all the participants a fruitful meeting over the next two weeks.

During the meeting, the FAO Panel of Experts on Pesticide Residues in Food was responsible for reviewing residue and analytical aspects of the pesticides under consideration, including data on their metabolism, fate in the environment and use patterns, and for estimating the maximum levels of residues that might occur as a result of use of the pesticides according to good agricultural practice. The methodologies are described in detail in the FAO Manual on the submission and evaluation of pesticide residue data for the estimation of maximum residue levels in food and feed (2016) hereafter referred to as the FAO manual. The WHO Core Assessment Group on Pesticide Residues was responsible for reviewing toxicological and related data in order to establish acceptable daily intakes (ADIs) and acute reference doses (ARfDs), where necessary and possible.

The Meeting evaluated 30 pesticides, including eight new compounds and three compounds that were re-evaluated for toxicity or residues, or both, within the periodic review programme of the Codex Committee on Pesticide Residues (CCPR). The Meeting established ADIs and ARfDs, estimated maximum residue levels and recommended them for use by CCPR, and estimated supervised trials median residue (STMR) and highest residue (HR) levels as a basis for estimating dietary exposures.

The Meeting also estimated the dietary exposures (both acute and long-term) to the pesticides reviewed and, on this basis, performed a dietary risk assessment in relation to the relevant ADI and where necessary the ARfD. Cases in which ADIs or ARfDs may be exceeded, if they occur, are clearly indicated in order to facilitate the decision-making process by CCPR.

The Meeting considered a number of general issues addressing procedures for the evaluation and risk assessment of pesticide residues.

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