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**235**

# **Pesticide residues in food 2018**

**Joint FAO/WHO Meeting  
on Pesticide Residues**

**EVALUATIONS**

**2018**

**PART 1 - RESIDUES**



# Pesticide residues in food 2018

235

## Evaluations 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  
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\* New compound

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



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## Abbreviations

AD	administered dose
ADI	acceptable daily intake
AR	applied radioactivity
ARfD	acute reference dose
BBCH	Biologische Bundesanstalt, Bundessortenamt und CHemische Industrie
BMD	benchmark dosing
bw	body weight
CAR	constitutive androstane receptor
CAS	Chemical Abstracts Service
CCPR	Codex Committee on Pesticide Residues
cGAP	critical GAP
DALA	days after last application
DAT	days after treatment
DM	dry matter
DT <sub>50</sub>	time required for 50% dissipation of the initial concentration
DT <sub>90</sub>	time required for 90% dissipation of the initial concentration
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
GEMS	Global Environment Monitoring System – Food Contamination Monitoring and Assessment Programme
GLP	good laboratory practice
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
IPCS	International Programme on Chemical Safety
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 <sub>50</sub>	median lethal concentration

LC-MS/MS	liquid chromatography-tandem mass spectrometry
LD <sub>50</sub>	median lethal dose
LOAEL	lowest-observed-adverse-effect level
LOD	limit of detection
log P <sub>ow</sub>	octanol-water partition coefficient
LOQ	limit of quantification
MRL	maximum residue limit
NOAEC	no-observed-adverse-effect concentration
NOAEL	no-observed-adverse-effect level
OECD	Organisation for Economic Co-operation and Development
PBI	plant-back interval
PES	post-extraction solids
Pf	processing factor
PHI	pre-harvest interval
POD	point of departure
ppm	parts per million
RAC	raw agricultural commodity
RTI	re-treatment interval
STMR	supervised trials median residue
STMR-P	supervised trials median residue in a processed commodity
TRR	total radioactive residues
UL	uniformly labelled
USA	United States of America
USEPA	USA Environmental Protection Agency
WHO	World Health Organization

## **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

The Joint FAO/WHO Meeting on Pesticide Residues (JMPR) was taken place at the headquarters of the Federal Institute for Risk Assessment (BfR) in Berlin, Germany, from 18 to 27 September 2018. The meeting was opened by Dr Roland Solecki, Head of the BfR Department of Pesticides Safety. Over 50 participants from five continents participated in the Meeting.

On behalf of the President of the BfR, Dr Solecki welcomed the JMPR Meeting being held in Berlin. He highlighted that it was the first time the JMPR had been hosted by a national government authority in its 55 year history of assessing consumer health risks of pesticide residues in foods and feeds, and recommending maximum residue levels to the Codex Alimentarius Commission. He remarked, that experts from the BfR, and its predecessor organizations had a long history of participation in the the work of the JMPR and had contributed to both the development of, and international harmonization of many assessment concepts. From that perspective he considered the hosting of the 2018 JMPR another important initiative in that process. The BfR is the scientific body of the Federal Republic of Germany and provides expert reports and opinions on risks related to food ingestion and exposure to consumers including risk assessments of industrial chemicals, food additives, biocides and pesticides. Dr Solecki indicated that the BfR held the view that international harmonization was extremely important, as it forms the basis for national and international acceptance of risk assessments.

He also highlighted that such hosting of the JMPR Meeting would provide opportunities for national competent authorities of Codex Members, to improve linkages and strengthen relationships with the JMPR. Such collaboration would help facilitate a better understanding of the working principles of the JMPR and contribute to the further harmonization of risk assessment principles. The JMPR Secretariats expressed their appreciation to BfR for hosting this meeting and for all the support of BfR to the work of JMPR. The experience gained from this meeting would benefit the JMPR Secretariats for future co-organizing the meeting with other national authorities.

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 29 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 short-term and long-term) of the pesticides reviewed and, on this basis, performed a dietary risk assessment in relation to the relevant ADI and where necessary ARfD. Cases in which ADIs or ARfDs may be exceeded were clearly indicated in order to facilitate the decision-making process by CCPR.

The Meeting considered general items addressing procedures for the evaluation and risk assessment of pesticide residues used to recommend maximum residue levels.





The annual Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group on Pesticide Residues was held in Berlin, Germany, from 18 to 27 September 2018. The FAO Panel of Experts had met in preparatory sessions from 13 to 17 September 2018. The Meeting was held in pursuance of recommendations made by previous Meetings and accepted by the governing bodies of FAO and WHO that studies should be undertaken jointly by experts to evaluate possible hazards to humans arising from the occurrence of pesticide residues in foods. During the meeting the FAO Panel of Experts was responsible for reviewing pesticide use patterns (use of good agricultural practices), data on the chemistry and composition of the pesticides and methods of analysis for pesticide residues and for estimating the maximum residue levels that might occur as a result of the use of the pesticides according to good agricultural use practices. The WHO Core Assessment Group was responsible for reviewing toxicological and related data and for estimating, where possible and appropriate, acceptable daily intakes (ADIs) and acute reference doses (ARfDs) of the pesticides for humans. This report contains information on ADIs, ARfDs, maximum residue levels, and general principles for the evaluation of pesticides. The recommendations of the Joint Meeting, including further research and information, are proposed for use by Member governments of the respective agencies and other interested parties.

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