Pesticide residues in food

WHO Core Assessment Group on Pesticide Residues

Guidance document for WHO monographers and reviewers

World Health Organization

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List of abbreviations

ADI	acceptable daily intake
ADME	absorption, distribution, metabolism, excretion
ALP	alkaline phosphatase
ALT	alanine aminotransferase
ARfD	acute reference dose
AST	aspartate aminotransferase
AUC	area under the plasma concentration–time curve
BMD	benchmark dose
BMD_{10}	benchmark dose for a 10% response
BMDL	lower 95% confidence limit on the benchmark dose
bw	body weight
CAS	Chemical Abstracts Service
CCPR	Codex Committee on Pesticide Residues
C_{max}	peak plasma concentration
CPN	chronic progressive nephropathy
DES	diethylstilbesterol
DHT	dihydroxytestosterone
DNA	deoxyribonucleic acid
EHC	Environmental Health Criteria (monograph)
F344	Fischer 344
FAO	Food and Agriculture Organization of the United Nations
GGT	gamma-glutamyltransferase
GLP	good laboratory practice
GnRH	gonadotrophin releasing hormone
IARC	International Agency for Research on Cancer
IESTI	international estimate of short-term dietary intake
IPCS	International Programme on Chemical Safety
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
JMPR	Joint FAO/WHO Meeting on Pesticide Residues
LCA	Leydig cell adenoma
LD_{50}	median lethal dose
LH	luteinizing hormone
LOAEL	lowest-observed-adverse-effect level
LOEL	lowest-observed-effect level
MRL	maximum residue limit (when maximum residue level recommended by JMPR is adopted by Codex)
MTBE	methyl tertiary butyl ether
NOAEL	no-observed-adverse-effect level
NTP	National Toxicology Program (USA)
OECD	Organisation for Economic Co-operation and Development
POD	point of departure
ppm	parts per million
RITA	Registry of Industrial Toxicology Animal-data
SD	Sprague-Dawley
SI	Le Système international d'unités
TBA	tertiary butyl alcohol
TD_{50}	daily dose rate for life to induce tumours in half of test animals that would have remained tumour-free at zero dose
TTC	threshold of toxicological concern
USA	United States of America
USEPA	United States Environmental Protection Agency
WHO	World Health Organization

• Part 1: Procedure and timelines

The procedure followed by the Joint Food and Agriculture Organization of the United Nations (FAO)/World Health Organization (WHO) Meeting on Pesticide Residues (JMPR) is focused around two meetings: the meeting of the Codex Committee on Pesticide Residues (CCPR), held in April each year, and the JMPR meeting itself, held in September each year. The procedure to be followed before and after a JMPR meeting to be organized for year X (e.g. 2022) is explained below, and the timeline is illustrated in Fig. 1.

Fig. 1. Timeline for the JMPR procedure for a meeting in year X

Year	X − 1									X												X + 1							
Month	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
Tasks	**A**	Prioritization					Call for data and monographer assignment			Preparation of the monograph						**B**		**C**	Publication of the report and monographs										

A: CCPR meeting

B: JMPR pre-meeting teleconference

C: Physical JMPR meeting

Step 1: Prioritization and framing from April to September year X – 1

A CCPR working group on prioritization is established to work electronically between two meetings of CCPR and to report to CCPR during its physical meeting in April. The priority list for JMPR year X is formally adopted by CCPR. Consequently, the preparation for a JMPR meeting in year X will last for about 18 months (from April year X − 1 to September year X).

From April to September, the sponsors prepare the submissions to JMPR (in anticipation of the call for data in October; see Step 2 below). During that period, the JMPR monographers as well as the JMPR Secretariat are active on the JMPR meeting for September year X – 1.

Step 2: Call for data and assignment of monographers from October to December year X – 1

Based on the CCPR priority list, the JMPR Secretariat finalizes the agenda for JMPR as a function of the resources available. A call for data is published early in October on both the FAO and WHO websites, with a deadline for the sponsors to submit their toxicological dossiers to the WHO Joint Secretary by 1 December.[1] Before December, each compound is assigned to a monographer. In general, a monographer prepares only one monograph, but in special circumstances one monographer could be asked to deal with two compounds. Each compound is also assigned to a reviewer. In general, a reviewer deals with two compounds, except for the Chair and the Rapporteur, who review only one each. Informal electronic working groups, including the sponsor, the monographer, the reviewer and the WHO Joint Secretary, are established for each compound. The WHO Joint Secretary provides the monographer with the standard templates for the JMPR monographs and the JMPR report items.

In December, the sponsors provide the monographer, the reviewer and the WHO Joint Secretary with copies of the toxicological dossiers, including a review of the literature and a selection of the relevant papers by the sponsor. This review should contain the criteria and keywords used for the literature search. The dossiers should be provided as electronic copies (PDF documents on a suitably indexed CD or DVD). The sponsors are sent an acknowledgement of receipt of the dossiers from the

[1] http://www.who.int/foodsafety/call-data-expert/en/

respective recipients. Incomplete dossiers may necessitate rescheduling the compound through the Codex working group on prioritization. The submitted data are archived by WHO for 5 years and then destroyed.

Step 3: Preparation of the draft monograph and interaction with the informal working group from December year X – 1 to August year X

During the 9-month period from December year X – 1 to August year X, the monographer produces a first draft and interacts with the informal working group as much as needed to request clarification or missing information. The monographer is responsible for a critical review of the published literature. This review should be documented in terms of the search strategy used (databases searched, keywords used, exclusion criteria applied) and the final results (total number of studies retrieved, number of studies excluded). At the end of June year X, a first draft of the monograph is distributed for each compound, first to the reviewer and then, after inclusion of the reviewer's comments, to all monographers and members. Each monograph includes an "Explanation" section, a "Comments" section and a "Toxicological evaluation" section, which will be used as the basis for the report item for the compound. The "Toxicological evaluation" should be provided by the reviewer. In early July year X, a series of teleconferences is organized by the WHO Joint Secretary for each compound, involving at least the monographer, the reviewer, the Chair and the WHO Joint Secretary. All other monographers and members are also invited to participate in the discussion. At the end of the series of teleconferences, a list of any outstanding questions is established for each compound and sent to each corresponding sponsor. A final draft of the monograph is sent by each monographer to the WHO Joint Secretary before the end of August year X. A copy of the draft monograph, excluding the "Comments" section and the "Toxicological evaluation" section (in which the acceptable daily intake [ADI] and acute reference dose [ARfD] are established, as necessary), is also sent to the sponsor for an accuracy check within 2 weeks. Formatted PDF copies and, when needed, printed copies of all monographs are distributed to JMPR participants at least a week before the beginning of the physical meeting in September year X.

Step 4: JMPR physical meeting and publications from September year X to August year X + 1

The physical meeting is organized jointly by FAO and WHO. All the experts mentioned previously – i.e. the monographers and the reviewers – participate in the meeting, as well as the scientific editor and the WHO Secretariat. At the start of the meeting, a chairperson and a rapporteur are proposed by the Secretariat and elected by the JMPR participants. The responsibility of the chairperson is to lead the discussions, search for a consensus and ensure that the agenda is respected. The rapporteur works together with the editor, who acts as assistant rapporteur. The responsibility of the rapporteur is to ensure the scientific completeness and validity of the report items before they are distributed to the Meeting. The responsibility of the editor/assistant rapporteur is to ensure the consistency of the report