

Pesticide residues in food — 2005

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

EVALUATIONS 2005

Part II — Toxicological

IPCS International Programme on Chemical Safety



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



**World Health
Organization**

Pesticide residues in food — 2005

Toxicological evaluations

**Sponsored jointly by FAO and WHO
With the support of the International Programme
on Chemical Safety (IPCS)**

**Joint Meeting of the
FAO Panel of Experts on Pesticide Residues
in Food and the Environment
and the
WHO Core Assessment Group**

Geneva, Switzerland, 20–29 September 2005

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The **International Programme on Chemical Safety** (IPCS), established in 1980, is a joint venture of the United Nations Environment Programme (UNEP), the International Labour Organization (ILO), and the World Health Organization (WHO). The overall objectives of the IPCS are to establish the scientific basis for assessing the risk to human health and the environment to exposure from chemicals, through international peer-review processes as a prerequisite for the promotion of chemical safety, and to provide technical assistance in strengthening national capacities for the sound management of chemicals.

The **Inter-Organization Programme for the Sound Management of Chemicals** (IOMC) was established in 1995 by UNEP, the Food and Agriculture Organization of the United Nations, WHO, the United Nations Industrial Development Organization, and the Organisation for Economic Co-operation and Development (Participating Organizations), following recommendations made by the 1992 United Nations Conference on the Environment and Development to strengthen cooperation and increase coordination in the field of chemical safety. The purpose of the IOMC is to promote coordination of the policies and activities pursued by the Participating Organizations, jointly or separately, to achieve the sound management of chemicals in relation to human health and the environment.

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* First full evaluation

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

**2005 Joint Meeting of the FAO Panel of Experts on
Pesticide Residues in Food and the Environment
and the WHO Core Assessment Group**

Geneva, 20–29 September 2005

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Abbreviations used

| | |
|------------------|--------------------------------------------------------|
| ADI | acceptable daily intake |
| ARfD | acute reference dose |
| AUC | area under the curve of concentration–time |
| bw | body weight |
| CAS | Chemical Abstracts Service |
| DMSO | dimethylsulfoxide |
| ECG | electrocardiogram |
| F ₀ | parental generation |
| F ₁ | first filial generation |
| F ₂ | second filial generation |
| FOB | functional observational battery |
| GLP | good laboratory practice |
| HPLC | high-performance liquid chromatography |
| IPCS | International Programme on Chemical Safety |
| ISO | International Organization for Standardization |
| IUPAC | International Union of Pure and Applied Chemistry |
| LC ₅₀ | median lethal concentration |
| LD ₅₀ | median lethal dose |
| LOAEL | lowest-observed-adverse-effect level |
| MS | mass spectrometry |
| MCV | mean corpuscular volume |
| MCH | mean corpuscular haemoglobin |
| MCHC | mean corpuscular haemoglobin concentration |
| MRL | maximum residue level |
| NOAEC | no-observed-adverse-effect concentration |
| NOAEL | no-observed-adverse-effect level |
| NMR | nuclear magnetic resonance |
| OECD | Organisation for Economic Co-operation and Development |
| ppm | parts per million |
| T ₃ | triiodothyronine |
| T ₄ | thyroxine |
| TSH | thyrotropin |
| TLC | thin-layer chromatography |
| TMDI | theoretical maximum daily intake |
| QA | quality assurance |
| WHO | World Health Organization |
| w/v | weight for volume |
| w/w | weight for weight |

Introduction

The toxicological monographs and monograph addenda contained in this volume were prepared by a WHO Core Assessment Group that met with the FAO Panel of Experts on Pesticide Residues in Food and the Environment in a Joint Meeting on Pesticide Residues (JMPR) in Geneva, Switzerland, on 20–29 September 2005.

Five of the compounds evaluated by the Core Assessment Group at the Meeting, dimethanamid-P/racemic dimethanamid, fenhexamid, indoxacarb, novaluron and sulfuric fluoride, were evaluated for the first time. The other 10 substances had been evaluated at previous meetings. For five of these, only information received since the previous evaluations is summarized in ‘monograph addenda’. Of these, acephate, imazalil and carbendazim were evaluated for establishment of an acute reference dose. The appropriate earlier documents on the five compounds should be consulted in order to obtain full toxicological profiles. Toxicological monographs were prepared on azocyclotin, benalaxyl, clofentezine, cyhexatin and propamocarb, summarizing new data and, where relevant, incorporating information from previous monographs and addenda. Reports and other documents resulting from previous Joint Meetings on Pesticide Residues are listed in Annex 1.

The report of the Joint Meeting has been published by the FAO as *FAO Plant Production and Protection Paper 183*. That report contains comments on the compounds considered, acceptable daily intakes established by the WHO Core Assessment Group, and maximum residue limits established by the FAO Panel of Experts. Monographs on residues prepared by the FAO Panel of Experts are published as a companion volume, as *Evaluations 2005, Part I, Residues*, in the FAO Plant Production and Protection Paper series.

The toxicological monographs and addenda contained in this volume are based on working papers that were prepared by temporary advisers before the 2005 Joint Meeting. A special acknowledgement is made to those advisers.

The preparation and editing of this volume was made possible by the technical and financial contributions of the lead institutions of the International Programme on Chemical Safety (IPCS), which supports the activities of the JMPR. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Central Unit of the IPCS concerning the legal status of any country, territory, city or area or of its authorities, nor concerning the delimitation of its frontiers or boundaries. The mention of specific companies or of certain manufacturers’ products does not imply that they are endorsed or recommended by the IPCS in preference to others of a similar nature that are not mentioned.

Any comments or new information on the biological properties or toxicity of the compounds included in this volume should be addressed to: Joint WHO Secretary of the Joint FAO/WHO Meeting on Pesticide Residues, International Programme on Chemical Safety, World Health Organization, 20 Avenue Appia, 1211 Geneva, Switzerland.