



## **PESTICIDE RESIDUES IN FOOD - 1997**

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

## **TOXICOLOGICAL AND ENVIRONMENTAL EVALUATIONS 1994**

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

Lyon 22 September - 1 October 1997

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The preparatory work for the toxicological evaluations of pesticide residues carried out by the WHO Expert Group on Pesticide Residues for consideration by the FAO/WHO Joint Meeting on Pesticide Residues in Food and the Environment is actively supported by the International Programme on Chemical Safety (IPCS) within the framework of the Inter-Organization Programme for the Sound Management of Chemicals.

The International Programme on Chemical Safety (IPCS), established in 1980, is a joint venture of the United Nations Environment Programme

(UNEP), the International Labour Organisation (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 from exposure to 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, ILO, 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 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.

IPCS gratefully acknowledges the assistance of Mrs. E. Heseltine, St Léon-sur-Vézère, France, for editing these monographs.

Health & Environment International Ltd, by agreement with WHO, performed independent literature searches on some of the substances on which data are summarized in this document in order to ensure that all relevant toxicological and related information was reviewed.

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\* First full evaluation

1997 Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group

Lyon, 22 September-1 October 1997

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Abbreviations used

ADI	acceptable daily intake
AMPA	aminomethylphosphonic acid
bw	body weight
CCPR	Codex Committee on Pesticide Residues
CoA	coenzyme A
CoE	Council of Europe
CYP	cytochrome P450
D	decedents
DMSO	dimethyl sulfoxide
EBOB	1-[(4-ethyl)phenyl]-4- <i>n</i> -propyl-2,6,7-trioxacyclo[2.2.2]octane
EPPO	European Plant Protection Organization
F	female
F <sub>0</sub>	parental generation
F <sub>1</sub>	first filial generation
F <sub>2</sub>	second filial generation
GABA	gamma-aminobutyric acid
HPLC	high-performance liquid chromatography
<i>hprt</i>	hypoxanthine-guanine phosphoribosyl transferase gene
IARC	International Agency for Research on Cancer
IPCS	International Programme on Chemical Safety
JMPR	Joint FAO/WHO Meeting on Pesticide Residues
LC <sub>50</sub>	median lethal concentration
LD <sub>50</sub>	median lethal dose
lambda <sub>max</sub>	maximum wavelength
LOAEL	lowest-observed-adverse-effect level
M	male
MRL	maximum residue limit
NOAEL	no-observed-adverse-effect level
NOEC	no-observed-effect concentration
NR	not reported
PEC	predicted environmental concentration
ppm	parts per million
RFLP	restriction fragment length polymorphism
S9	9000 × <i>g</i> supernatant fraction of rodent liver
T	terminally killed animals
T <sub>3</sub>	triiodothyronine
T <sub>4</sub>	thyroxine
T <sub>max</sub>	time of maximum concentration
TBPS	<i>tert</i> -butylbicyclophosphorothionate
TER	toxicity:exposure ratio
TSH	thyroid-stimulating hormone
w/w	weight per weight

## Introduction

The toxicological monographs and monograph addenda and the environmental monographs 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 Lyon, France, on 22 September-1 October 1997.

Two of the substances evaluated by the Core Assessment Group at this Meeting, fipronil and aminomethylphosphonic acid (AMPA), the primary degradation product of glyphosate in plants, soil, and water, were evaluated for the first time. Twelve of the substances had been evaluated at earlier meetings. For seven of these, abamectin,

amitrole, chlormequat, fenthion, lindane, methidathion, and phosalone, only information received since the previous evaluations is summarized, in 'monograph addenda'. The appropriate earlier documents should be consulted in order to obtain full toxicological profiles of these chemicals. Toxicological monographs were prepared on AMPA, fenamiphos, fenbuconazole, fipronil, guazatine, malathion, and triforine, 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.

Two environmental monographs are included, on 2,4-dichlorophenoxyacetic acid (2,4-D) salts and esters and on mevinphos. These monographs were prepared by a Core Assessment Group that met in Leicester, United Kingdom, in March 1997.

The report of the Joint Meeting has been published by the FAO as *FAO Plant Production and Protection Paper 145*. That report contains brief comments on the compounds considered, acceptable daily intakes established by the WHO Core Assessment Group, and maximum residue limits or guideline levels 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 1997, Part I, Residues*, in the FAO Plant Production and Protection Paper series.

The toxicological monographs and addenda and the environmental monographs contained in this volume are based on working papers that were prepared by temporary advisers before the 1997 Joint Meeting. A special acknowledgement is made to those advisers. The monographs were edited by Mrs E. Heseltine, St Léon-sur-Vézère, France.

The preparation and editing of this volume were 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 biology or toxicology 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, Avenue Appia, 1211 Geneva 27, Switzerland.

See Also:

[Toxicological Abbreviations](#)