

# Pesticide residues in food - 1992

## Toxicology evaluations

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

Rome, 21-30 September 1992

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INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY

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).

The International Programme on Chemical Safety (IPCS) is a joint venture of the United Nations Environment Programme, the International Labour Organisation, and the World Health Organization. One of the main objectives of the IPCS is to carry out and disseminate evaluations of the effects of chemicals on human health and the quality of the environment.

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\* First full evaluation

**1992 JOINT MEETING OF THE FAO PANEL OF EXPERTS ON  
PESTICIDE RESIDUES IN FOOD AND THE ENVIRONMENT AND THE  
WHO EXPERT GROUP ON PESTICIDE RESIDUES**

Rome, 21-30 September 1992

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## ABBREVIATIONS USED IN THESE MONOGRAPHS

ACH	acetylcholine
AChE	acetylcholinesterase
ACTH	adrenocorticotrophic hormone
ADI	acceptable daily intake
ADP	adenosine diphosphate
A/G	albumin/globulin ratio
a.i.	active ingredient
ALAT	alanine aminotransferase
ALP	alkaline phosphatase
ALT	alanine transaminase
ASAT	aspartate aminotransferase
AST	aspartate transaminase
ATP	adenosine triphosphate
AUC	area under the curve
BUN	blood urea nitrogen
bw	body weight
cf	confer, compare to
ChE	cholinesterase
Ci	curie
CHO	Chinese hamster ovary
CMC	carboxymethylcellulose
CNS	central nervous system
DMSO	dimethylsulfoxide
DNA	deoxyribonucleic acid
ECG	electrocardiogram
EEG	electroencephalogram
ELP	exploratory locomotion pattern
ESR	erythrocyte sedimentation rate
F	female
F <sub>0</sub>	parental generation
F <sub>1</sub>	filial generation, first
F <sub>2</sub>	filial generation, second
GC	gas chromatography
GGT	gamma-glutamyltransferase
G.I.	gastrointestinal
GIT	gastrointestinal tract
GM	Geiger meter

GOT	glutamate-oxaloacetate transaminase
GPT	glutamate-pyruvate transaminase
GSH	reduced glutathione
GSSG	oxidized glutathione
GST	glutathione-S-transferase
GTP	$\alpha$ -glutamyltranspeptidase
H	hour
Ha	hectare
Hb	haemoglobin
HCT	haematocrit
HGRPT	hypoxanthine-guanine phosphoribosyl transferase
HPLC	high pressure liquid chromatography
Ht	haematocrit
I <sub>50</sub>	inhibitory dose, 50%
IBT	Industrial Bio-Test Laboratories, Inc.
i.m.	intramuscular
inh	inhalation
i.p.	intraperitoneal
IPCS	International Programme on Chemical Safety
i.v.	intravenous
JMPR	Joint FAO/WHO Meeting on Pesticide Residues
l	litre
LC <sub>50</sub>	lethal concentration, median
LD <sub>50</sub>	lethal dose, median
LDH	lactate dehydrogenase
LOAEL	lowest-observed-adverse-effect-level
m	metre
M	male
MCH	mean corpuscular haemoglobin
MCHC	mean corpuscular haemoglobin concentration
MCV	mean corpuscular volume
MFO	mixed function oxidase(s)
MHEC	methylhydroxyethylcellulose
ml	milliliter
mTD	minimum toxic dose
MTD	maximum tolerated dose
NADPH	nicotinamide adenine dinucleotide phosphate (reduced)
NMR	nuclear magnetic resonance
NOAEL	no-observed-adverse-effect level
NOEL	no-observed-effect level
NSE	non-specific esterase
NTE	neurotoxic target esterase

OCT	ornithylcarbamyl transferase
2-PAM	2-pralidoxime
PCV	haematocrit (packed corpuscular volume)
PEG	polyethylene glycol
p.o.	by mouth
PI	primary irritation
ppm	parts per million
PSP	phenolsulfophthalein
PrT	prothrombin time
PT	thromboplastin time
PTT	partial thromboplastin time
RBC	red blood cell
RNA	ribonucleic acid
SAP	serum alkaline phosphatase
s.c.	subcutaneous(ly)
SCE	sister chromatide exchange
SD	standard deviation
SDH	sorbitol dehydrogenase
SER	smooth endoplasmic reticulum
SGOT	serum GOT
SGPT	serum GPT
SPF	specific pathogen free
T <sub>3</sub>	tri-iodothyronine
T <sub>4</sub>	thyroxine
TLC	thin layer chromatography
TOCP	tri-ortho-cresyl phosphate
TSH	thyrotropine
TWA	time weighted average
UDS	unscheduled DNA synthesis
v/v	volume/volume
WBC	white blood cell
W/W	weight to weight

## INTRODUCTION

The toxicological monographs and monograph addenda contained in this volume were prepared by a WHO Expert Group on Pesticide Residues 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 Rome, Italy, 21 September to 30 September 1992. These monographs summarize the safety data on those pesticide residues for which sufficient information was provided to the WHO Expert Group for it to make decisions regarding acceptable daily intakes.

Most of the compounds considered by the WHO Expert Group at this Meeting had been evaluated at previous meetings. For some compounds, only new information is summarized in the relevant "monograph addenda". In the case of aldicarb, dicofol, fenbutatin oxide, iprodione, methidathion and pirimiphos-methyl, toxicological monographs, summarizing the data that were received recently and incorporating the previous monographs and monograph addenda on these compounds, were prepared. Reference is made to reports and other documents resulting from previous Joint Meetings of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and WHO Expert Groups on Pesticide Residues which are listed in Annex 1. For monograph addenda, the appropriate documents should be consulted to obtain a full toxicological profile of the chemicals under consideration.

The report of the Joint Meeting has been published by the Food and Agriculture Organization (FAO) of the United Nations as FAO Plant Production and Protection Paper No. 116. The report contains brief comments on the compounds under consideration, acceptable daily intakes established by the WHO Expert Group, and maximum residue limits or guideline levels established by the FAO Panel of Experts. Residues monographs prepared by the FAO Panel of Experts have been published as a companion volume to this one: Evaluations 1992, Part I- Residues, in the FAO Plant Production and Protection Paper series.

The toxicological monographs and monograph addenda contained in this volume are based upon working papers that were prepared by Temporary Advisers in advance of the 1992 Joint Meeting. A special acknowledgement is given to those who prepared these working papers. The monographs were edited by Mr D.J. Clegg, Carp, Ontario, Canada.

The preparation and editing of the monographs included in this volume have been made possible through the technical and financial contributions of the lead institutions of the International Programme on Chemical Safety (IPCS), which support the activities of 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 its authorities, or 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 or toxicological data on the compounds reported in this document 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.

**TOXICOLOGICAL MONOGRAPHS AND MONOGRAPH ADDENDA**

