
IPCS PESTICIDE ACTIVITIES

The International Programme on Chemical Safety (IPCS) devotes significant resources to pesticides, primarily for their assessment, but also for management support. The importance that IPCS places on these activities is based on the widespread use of pesticides, both in agriculture and in public health, and a high level of public concern in both developed and developing countries because of the intrinsic toxicity of and potential exposure to these chemicals.

This brief summary outlines the primary activities of IPCS in the field of pesticides. The primary responsibility for some of the activities summarized here are with programmes within WHO other than IPCS; however, IPCS plays a role in all of them, e.g. toxicity evaluations in support of WHO Pesticides Evaluation Scheme (WHOPES) and WHO guidelines for drinking-water quality.

I. Risk assessments

The ultimate goal of these activities is to identify the type and extent of the potential risks to human health and the environment arising from the manufacture, transportation, use, storage, or disposal of pesticides or consumption of pesticide residues. The results of these assessments are made available to governmental authorities and the general public through the publication of reports and monographs.

A. Joint FAO/WHO Meeting on Pesticide Residues (JMPR)

Joint Meetings have been held yearly since 1963, during which time approximately 240 pesticides have been evaluated. Members invited by WHO review toxicological and related data and estimate, when possible, acceptable daily intakes (ADIs) of the pesticides for humans, as well as acute reference doses (ARfDs) where necessary. Members invited by Food and Agriculture Organization of the United Nations (FAO) review pesticide use patterns (good agricultural practices), data on the chemistry and composition of pesticides and methods of analysis for pesticide residues, and estimate maximum residue levels (MRLs) that might occur as a result of the use of the pesticides according to good agricultural practices. These proposed MRL's are then compared to the ADIs and ARfDs to perform a dietary risk assessment. MRLs serve as the basis for international standards established by the Codex Alimentarius Commission, which is administered by the Joint FAO/WHO Food Standards Programme, headquartered at FAO Headquarters in Rome. JMPR advises the Codex Committee on Pesticide Residues (CCPR), a special subject committee of the Codex that is responsible for recommending Codex MRLs.

Principles used by JMPR for the toxicological assessment of pesticide residues in food are summarized in Environmental Health Criteria (EHC) 104, which was published in 1990. This publication is available from WHO Marketing and Dissemination

(see Annex 1 for address). This principles document is currently being updated and harmonized with the safety assessment of food additives and contaminants and will be published on the IPCS Website.

A major portion of this inventory includes summaries of toxicological evaluations of pesticides by JMPR. MRLs that have been recommended by the Joint Meeting are not included. Nearly all of the MRLs have been adopted or are under consideration by the Codex; lists of Codex MRLs may be obtained from the Joint FAO/WHO Food Standards Programme (see Annex 1 for address) or are available at the Codex Website (<http://www.codexalimentarius.net/>).

Annex 2 lists the reports and other documents prepared by JMPR. Many of the older publications that are listed are out of print. The reports and evaluations that have been published by FAO may be obtained from FAO Distribution and Sales Section, while those published by WHO may be obtained from WHO Marketing and Dissemination (see Annex 1 for addresses). Toxicological evaluations are available online on IPCS INCHEM Website (<http://www.inchem.org>).

B. Environmental Health Criteria (EHC) monographs

EHC monographs are designed for scientific experts responsible for the evaluation of the risk incurred by chemicals to human health and the environment, enabling relevant authorities to establish policies for the safe use of these chemicals. Over 50 monographs dealing with pesticides have been published, which are included in this inventory. EHC monographs may be obtained from WHO Marketing and Dissemination (see Annex 1 for address); they are also available as html files on IPCS INCHEM Website (<http://www.inchem.org>) and those published in 1998 or later, as pdf files on the PCS Website (<http://www.who.int/ipcs/publications/ehc/en/>).

C. Health and Safety Guides (HSGs)

HSGs are designed for a wide range of administrators, managers, and decision-makers in various governmental agencies and in industry and trade unions who are involved in various aspects of the safe use of chemicals and the avoidance of environmental health hazards. The documents summarize toxicity information in simple, non-technical language, and provide practical advice on matters such as safe storage, handling and disposal of the chemical, accident prevention and health protection measures, first-aid and medical treatment in cases of over-exposure and clean-up procedures. Current regulations, guidelines, and standards are listed. More than 50 HSGs dealing with pesticides have been published, which are included in this inventory. HSGs may be obtained from WHO Marketing and Dissemination (see Annex 1 for address); they are also available on IPCS INCHEM Website

Introduction

(<http://www.inchem.org>).

D. WHO/FAO Data Sheets on Pesticides

In order to provide Member States, governments, and various other institutions with basic toxicological and other relevant information on individual Pesticides WHO, in collaboration with FAO, issues WHO/FAO Data Sheets on Pesticides. Priority is given to compounds in wide use in public health programmes and/or in agriculture, or having a high toxicity or an unusual toxicity profile. Since 1975, when the programme was initiated, 96 data sheets have been published in English and French. These documents are included in this inventory. WHO/FAO Data Sheets on Pesticides may be obtained from the Coordinator, International Programme on Chemical Safety (see Annex 1 for address). They are also available on IPCS INCHEM Website (<http://www.inchem.org>).

E. WHO Guidelines for Drinking-Water Quality

The third edition of the Guidelines (2004) includes guideline values/provisional guideline values for 37 pesticides. The new edition has reviewed and revised the recommended values for chemical limits in drinking water in line with the latest scientific evidence. The Guidelines reconfirm guideline values for over 100 chemicals. Because routine monitoring for all of the chemicals is not possible, the guidelines set out practical approaches to 'rule out' some chemicals and prioritize others using readily available information. The criteria used to decide whether a guideline value is established for a particular chemical constituent are: i) there is credible evidence of occurrence of the chemical in drinking-water, combined with evidence of actual or potential toxicity, ii) the chemical is of significant international concern, or iii) the chemical is being considered for inclusion or is included in the WHOPES programme. The publications and CD-ROM "electronic library" are available through WHO Marketing and Dissemination (see Annex 1 for more details on the publications and the address). The guidelines are also accessible at WHO Website (http://www.who.int/water_sanitation_health/dwq/guidelines/en/).

F. The WHO Pesticides Evaluation Scheme (WHOPES)

WHOPES was set up in 1960 and remains the only international programme that promotes and coordinates the testing and evaluation of pesticides intended for public health uses. The International Code of Conduct on the Distribution and Use of Pesticides constitutes the framework for WHOPES in promoting the safe handling and use, efficacy, cost-effective application and quality control of pesticide products/formulations for public health use. The development of specifications for pesticides and application equipment, for use in international trade

and quality control, forms an integral part of the WHOPES programme.

WHOPES functions in close collaboration with national disease and pest control programmes and national pesticide registration authorities, many international and regional organizations and institutions concerned with pesticide management, legislation and regulation, research institutions and with industry. The human and environmental safety assessment of the products are carried out in collaboration with the Programme on Chemical Safety, and a scientific committee, the WHOPES Working Group, assists WHOPES in reviewing evaluation reports and assessing current knowledge about products for their intended applications, and makes recommendations to WHOPES on their public health use. The reports of the WHOPES working group meetings are issued as WHO documents and are widely distributed (also available at WHOPES Website (<http://www.who.int/whopes/recommendations/wgm/en/>)). The WHO specifications for public health pesticides are developed in collaboration with FAO (see Section G) and published at WHOPES Website (<http://www.who.int/whopes/quality/en/>). (see Annex 1 for address). WHOPES is coordinated by the WHO Department of the Control of Neglected Tropical Diseases. This inventory identifies those pesticides on which specifications have been elaborated.

G. Joint FAO/WHO Meeting on Pesticide Specifications (JMPS)

In 2001 FAO and WHO agreed to develop jointly specifications for pesticides, thus providing unique, robust, and universally applicable standards for pesticide quality. This joint programme is based on a Memorandum of Understanding between the two Organizations and has led to the establishment of the Joint FAO/WHO Meeting on Pesticide Specifications (JMPS).

The procedure for the establishment of WHO specifications has, therefore, been revised and has been harmonized with the 'new' FAO procedure begun in 1999, as described in the *Manual on the Development and Use of FAO and WHO Specifications for Pesticides*. Under the new procedures the FAO and WHO specifications do not apply to nominally similar products of other manufacturers, nor to those in which the active ingredient is produced by other routes by the same manufacturer. The scope of these new specifications may be extended to similar products when the two Organizations are satisfied that the additional products are equivalent to those which served as the basis for the reference specification.

H. International Chemical Safety Cards (ICSCs)

ICSCs summarize essential product identity data and health and safety information on pure chemicals for use by workers and employers, agriculture and for the public at large. The cards in English are developed by making use of a set of standard phrases

to allow computerized translation to various languages. Approximately 1500 cards have been produced to date, a large number of which deal with individual pesticides. ICSCs and the criteria document to use the standard phrases, Compiler's Guide are also available on the internet addresses:

(CDC Website <http://www.cdc.gov/niosh/ipcs/icstart.html>, IPCS Website <http://www.who.int/ipcs/en/>, ILO Website <http://www.ilo.org/public/english/protection/safework/cis/products/icsc/index.htm>, and IPCS INCHEM Website <http://www.inchem.org>).

I. The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification

The classification was approved by the Twenty-Eighth World Health Assembly in 1975 and has since gained wide recognition in a number of Member States and by pesticide registration authorities. The Classification takes into account acute oral or dermal toxicity and any irreversible effects that might be recognized. The Guidelines to Classification are revised periodically based on documented scientific evidence. The Classification may be obtained from the Coordinator, International Programme on Chemical Safety (see Annex 1 for address). The document also available online at the IPCS Website (<http://www.who.int/ipcs/en/>).

J. Concise International Chemical Assessment Documents (CICADs)

Concise International Chemical Assessment Documents (CICADs), which are based on existing national assessment documents of high scientific quality, provide, in a concise form, information similar to that in EHC monographs and HSGs. Sixty-six CICADs have been produced, and several more are in preparation. CICADs do not normally cover pesticides in agricultural use, as the JMPR documents are considered to be a more appropriate process for these chemicals; pesticides no more in agricultural use, or in mainly public health uses, for which there is continuing exposure, may be covered in CICADs. Because CICADs are prepared in parallel with national documents, they provide a tool for sharing the burden of evaluations.

II. Provision of support for risk management

In addition to assessing risks, IPCS supports activities to reduce hazards from pesticides. This is accomplished through a number of activities, including those described here. These activities are implemented through a variety of joint programmes with other international organizations. Relevant activities on individual pesticides are not included in this inventory. Further information on these activities may be obtained from the Coordinator, International Programme on Chemical Safety (see Annex 1 for address).

A. Prevention of pesticide poisonings

This activity includes the production of guidelines for poison control, the validation and availability of antidotes used in the treatment of poisonings and, in particular, the evaluation of the existing antidotes used in the treatment of pesticide poisonings. The key role in these activities is the development of information systems for poison control, including harmonization and exchange of data. Particular attention is given to the medical response to chemical emergencies in case of chemical accident.

B. Education and training

IPCS provides training on basic chemical safety (toxicity, ecotoxicity, and risk assessment) for government officials and public health advisers, primarily from developing countries; this training defines the principles of chemical safety and its application to pesticide safety and use as well as to other groups of chemicals. A series of linked training modules at an advanced level has been prepared. These modules are directed to government officials with responsibility for pesticides, including registration and licensing, inspection, safe use and disposal. Courses at this level have also been conducted using existing training materials.

IPCS has developed specific training activities on the safe use of pesticides. Courses are designed to train the trainers at various levels (basic, intermediate, and high). A manual containing 120 modules in nine sections has been translated into many languages.

C. Epidemiology of acute pesticide poisonings

The unsafe use of pesticides represents a problem to human health both in developed and developing countries. Although the adverse effects of pesticides on human and environmental health have been studied in almost every country, controversy continues about the extent and severity of the poisonings. The primary reasons for the controversy centre on the limited scope of past reports and studies.

IPCS has initiated a project that will provide reliable and updated information on the state of the problem that will allow the comparability of epidemiological data among various study populations. Data from different sources and study sites will be analyzed, guidance for strengthening national data collection systems will be provided, and recommendations for preventive and educational activities will be given. These activities are designed to reduce the incidence and severity of poisonings/adverse effects.

III. Joint Meeting on Pesticides (JMP)

The *Joint Meeting on Pesticides* (JMP) was established to consolidate international activities on pesticide assessments. It was designed to consist of

Introduction

Core Assessment Groups that perform the basic toxicological and environmental assessments of pesticides and three panels, the Panel on Residues in Food, the Environmental Panel, and the Panel on Public and Occupational Health, to provide practical advice on pesticide safety and use. IPCS has overall responsibility for coordinating this activity. The basic structure of the Joint Meeting on Pesticides is outlined in Figure 1.

To date, ten Core Assessment Group meetings have been held. The first meeting was held in 1994 at which time five draft EHC documents were reviewed. The results of these reviews are included in

this summary, with further information provided in Annex 3. Core Assessment Groups met with the Panel on Residues in Food, which was organized by FAO, from 1995 through 2001, which constituted the normal Joint Meetings on Pesticide Residues. The evaluations performed at these Meetings are included under "JMPR evaluations" in this summary. EHC documents were prepared on three pesticides at a Core Assessment Group meeting in early 1997. JMP has not been fully implemented for a number of reasons, and meetings of the other panels have not been held.

Figure 1

Joint Meeting on Pesticides (JMP)

