The WHO Recommended Classification of Pesticides by Hazard

and Guidelines to Classification 2019

World Health Organization



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2019



The **International Programme on Chemical Safety (IPCS)** was established in 1980. The overall objectives of the IPCS are to establish the scientific basis for assessment of 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.

This publication was developed in the IOMC context. The contents do not necessarily reflect the views or stated policies of individual IOMC Participating Organizations.

The **Inter-Organization Programme for the Sound Management of Chemicals (IOMC)** was established in 1995 following recommendations made by the 1992 UN Conference on Environment and Development to strengthen cooperation and increase international coordination in the field of chemical safety. The Participating Organizations are: FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO, World Bank and OECD. 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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The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification 2019

The WHO Recommended Classification of Pesticides by Hazard was approved by the 28th World Health Assembly in 1975 and has since gained wide acceptance. When it was published in the WHO Chronicle, 29, 397-401 (1975), an annex, which was not part of the Classification, illustrated its use by listing examples of classification of some pesticidal active ingredients and their formulations. Later suggestions were made by Member States and pesticide registration authorities that further guidance should be given on the classification of individual pesticides. Guidelines were first issued in 1978, and have since been revised and reissued every few years.

Up until 2009 the original guidelines approved by the World Health Assembly in 1975 were followed without amendment. The 2009 version of the guidelines introduced revised criteria for classification for the WHO Hazard Classes to take into account "*The Globally Harmonized System of Classification and Labelling of Chemicals*" (GHS)¹. The GHS was published with the intent to provide a globally-harmonized system to address classification of chemicals, labels, and safety data sheets. The GHS (with subsequent revisions) is now being widely used for the classification and labelling of chemicals worldwide.

The information provided in this publication can be used to support efforts to manage pesticides appropriately, in line with the *WHO/FAO International Code of Conduct on Pesticide Management*². In particular, this publication can be used to define "highly hazardous pesticides" using the criteria developed by the Joint FAO/WHO Meeting on Pesticide Management³ (page 12).

The document is arranged as follows:

Part I: Overarching principles for the classification of pesticides as recommended by the World Health Assembly. These principles continue to apply, but the World Health Assembly Resolution envisaged that the classification criteria might need to be developed with time and increasing experience. The guide-points originally proposed in 1975 were aligned with corresponding Acute Toxicity Hazard Categories from the GHS.

Part II: Guidelines to Classification. Individual active ingredients are classified in a series of tables, according to the oral or dermal toxicity of the technical material. The tables are subject to review periodically. As has always been the case, the classification of some pesticides has been adjusted to take account of severe hazards to health other than acute toxicity.

The GHS Acute Toxicity Hazard Category for each pesticide is also presented. The GHS also contains provisions for classification according to carcinogenic, mutagenic or reproductive effects, or effects of long-term or repeated exposures. Many Member States have established and published GHS

¹ See http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.

² See http://www.fao.org/3/I3604E/i3604e.pdf.

³ See http://apps.who.int/iris/bitstream/10665/205561/1/9789241510417_eng.pdf?ua=1.

classifications for these other end-points for pesticides and other chemicals under their jurisdiction. These classifications may be identified from online resources such as the OECD eChemPortal (echemportal.org).

The toxicity values are intended to be a guide only. Formulations should be separately classified using the methods set out on pages 4 (single technical product) and 8 (mixtures) and the table in Part I. To assist in the classification of formulations, an annex is provided giving numerical tables from which the classification may also be derived.

Comments on Part II of the document are welcome, together with proposals for new entries. These should be addressed to the International Programme on Chemical Safety, World Health Organization, 20 avenue Appia, 1211 Geneva 27, Switzerland, and should include supporting data on the compound being commented on or proposed.

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PART I: RECOMMENDED CLASSIFICATION OF PESTICIDES BY HAZARD

Extract from WHO Chronicle, 29: 397-401 (1975)

In 1973, the WHO Executive Board asked the Director-General of WHO to take steps to develop a tentative classification of pesticides that would distinguish between the more and the less hazardous forms of each pesticide. A proposal for a WHO recommended classification of pesticides by hazard was accordingly prepared, taking into account the views of members of the WHO Expert Advisory Panel on Insecticides and other expert advisory panels with special competence and interest in pesticide technology, as well as the comments of WHO Member States and of two international agencies. This proposal was adopted by the Twenty-eighth World Health Assembly, which recommended the use of the classification by Member States, international agencies, and regional bodies.

The text below is reproduced from the Proposal⁴ which was adopted by the World Health Assembly in 1975.

The hazard referred to in this Recommendation is the acute risk to health (that is, the risk of single or multiple exposures over a relatively short period of time) that might be encountered accidentally by any person handling the product in accordance with the directions for handling by the manufacturer or in accordance with the rules laid down for storage and transportation by competent international bodies.

Any classification based on biological data can never be treated as final. In the assessment of biological data, honest differences of opinion are inevitable and most borderline cases can be reclassified in an adjacent class. Variability or inconsistency in toxicity data due to differences in susceptibility of test animals, or to experimental techniques and materials used can also result in differing assessments. The classification criteria are guide-points intended to supplement but never to substitute for special knowledge, sound clinical judgement or experience with a compound. Reappraisal might be necessary from time to time.

Basis of classification

The classification distinguishes between the more and the less hazardous forms of each pesticide in that it is based on the toxicity of the technical compound and on its formulations. [In particular, allowance is made for the lesser hazards from solids as compared with liquids.]⁵

⁴ Official Record of the World Health Organization 1975, No.223, Part 1, p.12

⁵ Note: this distinction is not made in the GHS and no longer applies to the WHO Classification

The classification is based primarily on the acute oral and dermal toxicity to the rat since these determinations are standard procedures in toxicology. Where the dermal LD_{50}^{6} value of a compound is such that it would place it in a more restrictive class than the oral LD_{50} value would indicate, the compound will always be classified in the more restrictive class. Provision is made for the classification of a particular compound to be adjusted if, for any reason, the acute hazard to man differs from that indicated by LD_{50} assessments alone.

Application of the criteria for classification

- (a) Where it is shown that for a particular compound the rat is not the most suitable test animal (for example, if another species is conspicuously more sensitive or more closely resembles man in its reaction) then the classification of that compound should take this into account.
- (b) In practice, the majority of classifications will be made on the acute oral LD₅₀ value. However, dermal toxicity must always be considered since it has been found that, under most conditions of handling pesticides, a high proportion of the total exposure is dermal. Classification based on dermal data in a class indicating a great risk is necessary when the dermal LD₅₀ values indicate greater hazard than oral LD₅₀ values.
- (c) If the active ingredient produces irreversible damage to vital organs, is highly volatile, is markedly cumulative in its effect, or is found after direct observations to be particularly hazardous or significantly allergenic to man, then adjustments to the classification can be made by classifying the compound in a class indicating a higher hazard. Alternatively, if it can be shown that the preparation is less toxic or hazardous than expected from consideration of the LD_{50} values of the ingredient or ingredients, or for any other reason, adjustments should be made by classifying the compound in a class indicating a lower hazard.
- (d) In certain special cases the acute oral or dermal LD₅₀ values of the compound or formulation should not be used as the main basis for classification. In such cases (for example, aerosol preparations, other special formulations and fumigants), more appropriate criteria should be used.
- (e) It is highly desirable that, whenever practicable, toxicological data for each formulation to be classified should be available from the manufacturer. However, if such data are not obtainable, then the classification may be based on proportionate calculations from the LD₅₀ values of the technical ingredient or ingredients, according to the following formula:

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