

# Guide to Active Ingredient Hazards



PAN UK is an independent body working to eliminate the hazards of pesticides.

*Guide to Active Ingredient Hazards*, first published in 1998, updated 2001, prepared for DG Development of the EC by PAN UK, which is responsible for its contents.

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## Key to Active Ingredients Hazards Table

The Active Ingredients Hazard table (see separate pdf file) aims to provide a hazard profile for every pesticide active ingredient. The data contained in the table has been collected from a variety of authoritative sources to give as broad a profile as possible. There are over 1,000 different active ingredients and each of these has a different profile. By necessity the information is presented in an abbreviated form and the key below will help in the understanding and interpretation of the data.

This table refers only to the undiluted and unadulterated pesticide active ingredient. It is important to note that pesticide active ingredients are rarely used in an undiluted form or on their own. They are generally formulated into commercial products which contain other chemicals to assist in the storage, use and efficacy of the product. Many products also contain more than one active ingredient. These formulated mixtures will alter the hazard profile of the pesticide, sometimes making it less hazardous than the pure active ingredient, and sometimes more hazardous. However, since there are tens of thousands of formulated pesticide products traded under many names around the world, it is not possible to provide hazard data on each of them.

<b>Active ingredient</b>	The most commonly used name for the chemical. This should always appear on the product label and on any documentation relating to the product.	Avicide; <b>B</b> = Bactericide; <b>D</b> = Defoliant; <b>Des</b> = Desiccant; <b>F</b> = Fungicide; <b>Fum</b> = Fumigant; <b>H</b> = Herbicide; <b>HS</b> = Herbicide Safener; <b>I</b> = Insecticide; <b>IGR</b> = Insect Growth Regulator; <b>M</b> = Molluscicide; <b>Mit</b> = Miticide; <b>N</b> = Nematicide; <b>O</b> = Ovicide; <b>PGR</b> = Plant Growth Regulator; <b>R</b> = Rodenticide; <b>Rep</b> = Repellent;
<b>Other names</b>	Other names by which the chemical is sometimes known either when supplied in another country or by a different manufacturer.	
<b>Chemical type</b>	Active ingredients often belong to a group of chemical compounds defined by their chemical structure and characteristics.	<b>LD<sub>50</sub></b>
<b>Use</b>	Pesticide active ingredients are effective at controlling particular types of pest organisms. <b>A</b> = Acaricide; <b>Adj</b> = Adjuvant; <b>Alg</b> = Algicide; <b>At</b> = Attractant; <b>Av</b> =	The Oral LD <sub>50</sub> is the dose of <b>pure</b> chemical, measured in milligrams (mg) of chemical per kilogram (kg) body weight of the animal, which when fed to rats in laboratory tests was found to kill 50% of a sample population. This figure is an <b>indicator</b> of the acute toxicity of an active ingredient. Note that pesticide products often contain

much diluted active ingredients and these are often diluted again for application. The data in this column is taken from World Health Organisation publications where available. A blank field indicates that the LD<sub>50</sub> is not available. A figure such as 5001 indicates that the LD<sub>50</sub> is greater than 5000.

### WHO Class

World Health Organisation recommended classification of pesticides by hazard where **Ia** = Extremely hazardous; **Ib** = Highly hazardous; **II** = moderately hazardous; **III** = slightly hazardous; **U** = Unlikely to present a hazard in normal use; **OBS** = Obsolete or deleted chemical. This scale is based on LD<sub>50</sub> and is a guide of acute toxicity but not long term health effects. Fumigants cannot be classified in this system and are indicated by **Fum**.

### ADI

Acceptable Daily Intake for humans below which no risk of adverse health effects is considered to exist. ADI is given as oral intake in mg/kg body weight/day. This is an indicator of chronic toxicity.

### Acute hazards

Potential short term health risks faced by people exposed to the active ingredient.

### Cancer

#### US Environmental Protection Agency

The US EPA has changed its classification systems in recent years. Some categories have similar definitions:

#### Weight-of-evidence categories developed during the 1980s

**Group B** = Probable Human Carcinogen:

**B1** (limited evidence of carcinogenicity from human epidemiological studies); **B2** (sufficient evidence of carcinogenicity from animal studies)

**Group C** = Possible Human Carcinogen

#### Weight-of-evidence categories developed during the 1990s

**Known/Likely** available tumour effects and other key data are adequate to demonstrate convincingly a carcinogenic potential for humans.

**L1 = Likely** at high doses but Not Likely at low doses

**L2 = Likely** to be carcinogenic to humans available tumour effects and other key data are adequate to demonstrate carcinogenic potential for humans.

**S** = Cannot be Determined-Suggestive evidence from human or animal data is suggestive of carcinogenicity, but is not sufficient to conclude as to human carcinogenic potential.

Source: Office of Pesticide Programs List of Chemicals Evaluated for Carcinogenic

Potential, US EPA, [see details at [www.epa.gov/pesticides/carlist/](http://www.epa.gov/pesticides/carlist/) although list not available on website], August 2000.

### European Union

There is no single EU list available denoting carcinogenic pesticides. EC Directive 67/548 and subsequent amendments provide the classification of dangerous substances, including pesticides. The cancer classifications are:

**Category 2** (denoted as R45 on the pesticide label) = May Cause Cancer

**Category 3** (denoted as R40 on label) =

**Possible Risk of Irreversible Effects** (Cancer, as cited in table)

Sources: EC Directive 67/548 EEC and subsequent amendments; Chemicals (Hazard Information and Packaging for Supply) [CHIP2] Regulations 1994, Health and Safety Executive, UK.

### International Agency for Research on Cancer

**Group 1** = Carcinogenic to Humans

**Group 2A** = Probably Carcinogenic to Humans (limited evidence of carcinogenicity in humans and sufficient evidence in experimental animals).

**Group 2B** = Possibly Carcinogenic to Humans (limited evidence of carcinogenicity in humans and less than

sufficient evidence in experimental animals).

Source:

<http://193.51.164.11/monoeval/grlist.html>

[Note: lists cited include many non-pesticides]

The code **Ye** followed by a letter **O** indicates that another authority has determined a cancer risk associated with the active ingredient

**Reproductive and chronic effects** Long term health effects and reproductive effects resulting from continued exposure to the active ingredient.

Active ingredients that are listed as endocrine disrupting chemicals (EDC) are sourced from the Environment Agency (UK), DETR (UK), German Federal Environment Agency, the EU, Oslo and Paris Commission, and WWF. They include those that have been identified as EDC, those identified as potential EDC, and those confirmed as EDC. See PAN UKs List of Lists for more information.

**Environmental Effects**

Potential for environmental contamination and toxicity to non target organisms.

## Regulation

Controls imposed on the active ingredient. **PIC** indicates that the active ingredient is included in the list of chemicals subject to the (currently voluntary) Prior Informed Consent procedure established by the UNEP/FAO. Those marked **[PIC]** may be included if found in trade or use.

## Evaluations

Lists evaluation studies relating to the active ingredient which have been carried out and published by internationally recognised authorities. These are often the sources of data included in the table and can be used as references for further

information to supplement the table. **FAO PP&PP** = Food and Agriculture Organisation Plant production and protection paper; **ipcs-ehc** = International Programme on Chemical Safety - Environmental Health Criteria series; **UK-MAFF** = UK Ministry of Agriculture, Fisheries and Food evaluation; **WHO/PCS** = WHO toxicology assessment.

## See also

*List of Lists, PAN UK, London, 2001*  
[www.pan-uk.org](http://www.pan-uk.org)