PAN International List of Highly Hazardous Pesticides

(PAN List of HHP)

January 2011




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has been drafted by Pesticide Action Network Germany
for 'Working Group 1: Pesticides & Corporations of
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About this publication

For decades, the distribution and use of hazardous pesticides is an issue of concern. Since it's founding in 1982, Pesticide Action Network (PAN) has been the civil society organisation (CSO) most steadily and continuously calling for effective international action towards the elimination of hazardous pesticides. And PAN has been one of the key driving forces among non governmental organisations (NGOs) for improving plant protection policies towards safer, socially just and economically viable pest management systems.

In 1985, the International Code of Conduct on the Distribution and Use of Pesticides was adopted by FAO to respond to the growing evidence of risks associated with the use of pesticides. Already this first version of the Code of Conduct indirectly questioned the "safe use" concept as an overall approach to solve pesticide related problems, as it says in Article 5.2.3 that industry should halt sale and recall products when handling or use pose an unacceptable risk under any use directions or restrictions. Since the 1980[s] a number of international instruments and guidelines have been adopted[1] to tackle pesticide related problems. Additionally, many public and private initiatives have been implemented to reduce the adverse effects of pesticide use in agriculture. However, overall the initiatives have been successful only to a limited extent and the concept of a safe use of highly hazardous pesticides has been questioned increasingly by NGOs/CSOs, scientists, governmental representatives and in the private sector.

Meanwhile initiatives in food, forest and flower production and distribution chains resulted in black lists for some pesticides. In June 2008 the Agricultural Council of the European Union agreed on a common position regarding new rules for placing pesticides on the EU market and decided that substances proven to be carcinogenic, mutagenic or toxic for reproduction shall not be authorized in the EU.

In November 2006 the FAO Council discussed and endorsed SAICM, the Strategic Approach to International Chemicals Safety. In view of the broad range of activities envisaged within SAICM, the Council suggested that the activities of FAO could include ***risk reduction, including the progressive ban on highly hazardous pesticides***, promoting good agricultural practices, ensuring environmentally sound disposal of stock-piles of obsolete pesticides and capacity-building in establishing national and regional laboratories.

In April 2007 the FAO Council informed COAG[2] of its intention to develop a new initiative for pesticide risk reduction. COAG welcomed the initiative to reduce risks associated with the use of hazardous pesticides including the progressive ban on highly hazardous pesticides.

In October 2007 the FAO/WHO Panel of Experts on Pesticide Management discussed the so-called thought starter "*Addressing Highly Toxic Pesticides (HTPs)*" with a note from the Secretariat explaining: "*Through this thought-starter FAO wishes to start its work on highly hazardous pesticides.*" (...) "*This thought-starter builds on the information document provided*

[1] E.g. the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (http://www.pic.int), the Stockholm Convention on Persistent Organic Pollutants (http://www.pops.int) or the Strategic Approach to International Chemicals Management (http://www.chem.unep.ch/saicm)

[2] The FAO Committee on Agriculture (COAG) conducts periodic reviews and appraisals of agricultural and nutritional problems in order to propose concerted action by Member Nations and the Organization. It also reviews the agriculture and food and nutrition work programmes of the Organization and their implementation, with emphasis on the integration of all social, technical, economic, institutional and structural aspects in promoting agricultural and rural development. Its functions are enumerated in Rule XXXII of the General Rules of the Organization. Membership must be renewed formally each biennium.

to COAG on pesticide risk reduction[3]*. As a first step, this paper focuses on options for defining highly hazardous pesticides.*" Based on this thought starter the Panel of Experts outlined criteria to identify highly hazardous pesticides (HHP, see Table 1). In addition, the Panel of Experts "recommended that FAO and WHO, as a first step, should prepare a list of HHPs based on the criteria identified, and update it periodically in cooperation with UNEP. It further requested that such a list should be made widely known to all stakeholders involved in pesticide regulation and management."[4]

PAN strongly welcomes these decisions made by the FAO Council, the COAG and the FAO/WHO Panel of Experts on Pesticide Management. PAN is of the opinion however, that the list of indicators agreed by the Panel of Experts has some important shortcomings; in particular it is important to note that pesticides with endocrine disrupting properties, eco-toxicological properties, or inhalative toxicity have not been taken into account by the FAO/WHO Panel of Experts.

Because of these shortcomings, PAN International decided to independently develop a definition of "Highly Hazardous Pesticides" (HHPs) with a more comprehensive set of indicators and to achieve a list of HHPs based on the PAN list of indicators.

This publication describes how PAN defines Highly Hazardous Pesticides (HHPs) by identifying the indicators. An explanation of the indicators is followed by a list of HHPs on the basis of the indicators.

It is important to note that also the list of HHPs presented in this publication is *still not complete*. There are several reasons for the limitations in completeness.

- A major reason is that the indicators used for the PAN definition of HHPs are based on widely accepted classifications. Due to the time needed for achieving consented classifications these classifications do have shortcomings as explained in this publication.
- Correspondingly, there are "emerged priorities" e.g. pesticides with endocrine disrupting properties. Such properties are not sufficiently operationalised for pesticides as yet, e.g. OECD test guidelines for endocrine disruption have still not been fully developed.
- Measures to identify substances of high environmental concern have been restricted to the application of consented criteria indicating ubiquitous environmental occurrence and hazardous properties for one ecosystem service, bees.
- In addition, pesticides that may be shown to be linked with a high incidence of severe or irreversible adverse effects on human health or the environment are not identified systematically yet. On the basis of ongoing community monitoring, PAN will identify and list such highly hazardous pesticides in the future.
- Experiences in the past show that pesticides being classified as "moderately hazardous" by the World Health Organisation give reason for concern even though they are just classified as moderately hazardous. Examples are endosulfan and paraquat, pesticides that caused hundreds of poisonings, or pyrethrins which became known to cause

[3] This document is available at: http://www.fao.org/unfao/bodies/coag/coag20/index_en.htm

[4] The minutes of the panel of experts meeting October 2007 are available at: http://www.fao.org/ag/agp/agpp/pesticid/Code/Reports.htm

various incidences in the US. However, with a view to prioritisation PAN has not added WHO II ("moderately hazardous") pesticides to the list of indicators.

In order to implement a progressive ban of highly hazardous pesticides as supported by the FAO Council, the COAG, the FAO/WHO Panel of Experts for Pesticide Management and others, all stakeholders mentioned in the International Code of Conduct on the Distribution and Use of Pesticides should develop plans of action for a progressive ban of HHPs. These are governments, the pesticide industry, the food industry, farmers and farmer's organisations, and public interest groups.

This is especially important as there are currently no legal instruments available to achieve a structured and clearly targeted global progressive ban of HHPs other than the Stockholm convention for Persistent Organic Pollutants which focuses only on a very small group of HHPs.

This PAN list of HHPs provides a basis for action to implement the progressive ban of highly hazardous pesticides. PAN would like to encourage individuals, institutions, organizations and companies to develop a plan of action with priorities, timeframes and concrete measures. PAN itself will support such initiatives wherever possible.

Carina Weber / PAN Germany for PAN International
Hamburg, January 2011

PAN International Indicators for Identifying 'Highly Hazardous Pesticides'

The following Table shows the criteria and sources used by PAN to identify pesticides considered to be highly hazardous according to PAN.

Table 1: Characteristics of 'Highly Hazardous Pesticides' and sources used to identify HHP pesticides	
Criteria	**Measure**
High acute toxicity	'**Extremely hazardous**' (Class Ia) or '**highly hazardous**' (Class Ib) according to WHO Recommended Classification of Pesticides by Hazard or **'Very toxic by inhalation'** (R26) according to EU Directive 67/548 [5]
Long term toxic effect at chronic exposure	**Carcinogenic to humans** according to IARC, US EPA or **'Substances known to be carcinogenic to humans'** according to EU Directive 67/548 (Category 1) or **Probable/likely carcinogenic to humans** according to IARC, US EPA or **Substances which should be regarded as if they are carcinogenic to humans** (Category 2) according to EU Directive 67/548 or '**Known or presumed human carcinogens'** (Category 1) according to EU Regulation 1272/2008/EC or **Possible human carcinogen/ Suggestive evidence of carcinogenic potential** according to IARC, US EPA or '**Substances which cause concern for humans owing to possible carcinogenic effects'** (Category 3) according to EU Directive 67/548 or
	'**Substances known to be mutagenic to man'** (Category 1) according to EU Directive 67/548 or '**Substances which should be regarded as if they are mutagenic to man'** (Category 2) according to EU Directive 67/548 or **'Substances known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans. Substances known to induce heritable mutations in the germ cells of humans'** (Category 1**)** according to EU Regulation 1272/2008/EC
	'Substances known to impair fertility in humans' and/or **'Substances known to cause developmental toxicity in humans'** (Category 1) according to EU Directive 67/548 or **'Substances which should be regarded as if they impair fertility in humans' and/or 'Substances which should be regarded as if they cause developmental toxicity to humans'** (Category 2) according to EU Directive 67/548 or **'Known human reproductive toxicant'** (Category 1A) according to EU Regulation 1272/2008/EC **or** **'Presumed human reproductive toxicant'** (Category 1B) according to EU Regulation 1272/2008/EC.
	Endocrine disruptor or potential endocrine disruptor according to EU Category 1 and Category 2 or

[5] The classification in this Directive is the equivalent to the GHS classification for inhalative toxicity. It has been updated several times, the proposal of the 30st Adaptation to the Technical Progress (ATP) is used for the PAN List of HHP.

	'Suspected human reproductive toxicant (Category 2) ***AND*** **'Suspected human carcinogens**' (Category 2) according to EU Regulation 1272/2008/EC.
	Categories 1A and 1B of the GHS for carcinogenicity, mutagenicity, and reproductive toxicity will be used for the PAN HHP list as soon as it is available
High environmental concern	**Stockholm Convention: Pesticides listed in Annex A & B**
	Ozone depleting according to the Montreal Protocol
	'Very bioaccumulative' according to REACh criteria as listed by FOOTPRINT (BCF >5000) or
	'Very persistent' according to REACh criteria as listed by FOOTPINT (half-life > 60 d in marine- or freshwater or half-life > 180 d in marine or freshwater sediment) or
	Hazard to ecosystem services – 'Highly toxic for bees' according to U.S. EPA as listed by FOOTPRINT data (bee toxicity: LD50, µg/bee < 2)
Known to cause a high incidence of severe or irreversible adverse effects	**Rotterdam Convention: Pesticides listed in Annex III**
	Incidences to be documented

Explanatory notes and comments regarding the classification systems, lists and indicators being used by PAN to identify Highly Hazardous Pesticides

The Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

The aim of the GHS is a global harmonization of the classification and labeling of chemicals. The Plan of Implementation of the World Summit on Sustainable Development (WSSD), adopted in Johannesburg in 2002, encourages countries to implement the GHS as soon as possible with a view to having the system fully operational by 2008. However, it has not been fully implemented yet. The European Union already started to convert its classification and labeling system (Directives 67/548/EC and 1999/45/EC) to the GHS system (Regulation 1272/2008/EC). By 2015 the older Directive will be replaced, until then both systems will exist in parallel.

Since the GHS classification has not been established on a global scale PAN International applies the EU GHS (Regulation 1272/2008/EC) for the development of the List of HHP, but continues to apply (Directives 67/548/EC) as a complementary measure.

The WHO Recommended Classification of Pesticides by Hazard

The latest revision of the WHO Recommended Classification of Pesticides by Hazards was conducted in 2009 and contains about 870 pesticides. PAN included those pesticides listed in WHO Class Ia and Ib into the PAN HHP list.

The most recent version of the WHO classification must be considered incomplete for the following reasons:
- Since the last revision a large number of new active ingredients entered market, but their hazards have not been classified by WHO.
- LD_{50} values for inhalative toxicity are not included in the WHO classification. This is a major deficiency because users of pesticides are often exposed via inhalation.
- Endocrine disruption is not included in the WHO classification.
- Formulations are not included in the classification. The acute toxicity of formulations and mixtures can be calculated based on the percentage and the LD_{50} values of the active ingredients in the formulation or mixture. However, so-called 'inert' ingredients[6] are neglected in this calculation although they may have an influence on the toxicity of the formulation or the mixture.

Source used:

WHO (2010): The WHO recommended classification of pesticides by hazard and guidelines to classification 2009, International Program on Chemical Safety (IPCS) & World Health Organization (WHO), Geneva)

[6] "Inert" ingredient: substances which can enhance the efficiency of the active substance, make a product more degradable or easier to use. 'Inerts' are mostly handled as trade secrets of the manufacturer, which means they are not labelled on the product and therefore not included in the calculation. (More information see footnote 22.)

Regulation 1272/2008/EC – EU GHS

The new EU Regulation1272/2008/EC on classification, labelling and packaging of substances and mixtures entered into force in January 2009. It implements the Globally Harmonised System (GHS) and will stepwise replace Directive 67/548/EC (see below).

Classification and labelling of chemicals according to EU Regulation1272/2008/EC follows very similar criteria as Council Directive 67/548/EC, but uses instead of danger symbols new pictograms and instead of Risk and Safety phrases Hazard Statements and Precautionary Statements, respectively.

PAN uses EU Regulation1272/2008/EC complimentary to Directive 67/548/EC to identify pesticides which are considered carcinogenic, mutagenic and/or toxic to reproduction.

Sources used:

EC (2008): Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. Official Journal of the European Union L 353/1

EC (2009b): Commission Regulation 790/2009 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labeling and packaging of substances and mixtures. Official Journal of the European Union L 235/1

Council Directive 67/548/EC

The Globally Harmonized System (GHS) is based on the EU classification system. The combination of danger symbols for acute hazards with descriptive risk phrases for acute as well as sub-chronic and chronic toxicity, plus the categories for mutagenic, carcinogenic and reproductive effects, presents a fairly comprehensive instrument for the evaluation of chemicals.

The major legislative framework in force dealing with dangerous substances in the European Union is the Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances. For the PAN HHP list the final proposal for the 30th amendment[7] was used to identify pesticides which are very toxic by inhalation as well as pesticides considered carcinogenic, mutagenic and/or toxic to reproduction.

Sources used:

EC (1967): Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances. Official Journal of the European Community, No. 196, Brussels

ECB (2007): Final proposal of the Technical Committee on Classification and Labeling of Dangerous Substances for the 30th Adaptation to Technical Progress of Directive 67/548/EEC. European Chemical Bureau (ECB) http://ecb.jrc.ec.europa.eu/classification-labelling

[7] Final proposal of the Technical Committee on Classification and Labeling of Dangerous Substances for the 30th Adaptation to Technical Progress of Directive 67/548/EEC, http://ecb.jrc.ec.europa.eu/classification-labelling/

REACh

REACh, the 'Registration, Evaluation, Authorisation and Restriction of Chemicals' is a European Union Regulation (EC/2006/1907 of 18 December 2006). It addresses the production and use of chemical substances, and their potential impacts on both human health and the environment. REACH applies to all chemicals imported or produced in the EU.

The Technical Guidance Document[8] on risk assessment defines the criteria for persistence and bioaccumulation, which are used for the PAN list of HHP.

According to REACh chemicals are "very bioaccumulative" if their Bio-Concentration Factor (BCF) is larger than 5,000 and "very persistent" if their half-life in marine water or fresh water exceeds 60 days or their half-life in marine or freshwater sediment exceeds 180 days.

Source used:

ECB (2003): Technical Guidance Document on Risk Assessment in support of Commission Directive 93/67/EEC on Risk Assessment for new notified substances, Commission Regulation (EC) No 1488/94 on Risk Assessment for existing substances Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market. Part II. Institute for Health and Consumer Protection. European Chemicals Bureau (ECB)

International Agency for Research on Cancer (IARC)

The International Agency for Research on Cancer (IARC) is part of the World Health Organisation (WHO). The goal of IARC is to evaluate, with the assistance of international working groups of experts, critical reviews and evaluations of evidence of carcinogenicity and to publish them in monographs. This series of monographs started in 1972 and since then, almost 900 agents have been reviewed. Participants in the working groups are individual scientists who do not represent organisations, industry or governments.

All pesticides which are classified as 'carcinogenic to humans' (Group 1), 'probably carcinogenic to humans' (Group 2A) or 'possibly carcinogenic to humans' (Group 2B) have been included in the PAN List of HHPs.

Source used:

IARC (2006): Agents reviews by the IARC Monographs, Volumes 1-95 (by CAS Numbers), International Agency for Research on Cancer (IARC), Lion, France. Website: http://monographs.iarc.fr/index.php

U.S. Environmental Protection Agency (U.S. EPA)

Cancer Classification

The U.S. EPA Office of Pesticide Programs maintains a List of Chemicals Evaluated for Carcinogenic Potential.[9] This list is a product of the general risk assessment included in the process of pesticide registration. This classification can be seen as a further development of

[8] ECB (2003): Technical Guidance Document on Risk Assessment in support of Commission Directive 93/67/EEC on Risk Assessment for new notified substances, Commission Regulation (EC) No 1488/94 on Risk Assessment for existing substances Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market. Part II. Institute for Health and Consumer Protection. European Chemicals Bureau (ECB)

[9] US Environmental Protection Agency Office of Pesticide Programmes (2000): List of Chemicals Evaluated for Carcinogenic Potential, U.S. EPA Office of Pesticide Programmes, Washington, DC, USA

the IARC classification system, but also includes the potential exposure of humans.[10] Therefore, a low exposure potential can place a pesticide in a lower category even when sufficient evidence of carcinogenicity exists. U.S. EPA's classification of carcinogenicity has changed several times over the last 20 years. The list is updated annually, but its focus is mostly on pesticides registered in the USA.

Source used:

US EPA (2007): Chemicals Evaluated for Carcinogenic Potential, April 26, 2006, Science Information Management Branch, Health Effects Division, Office of Pesticide Programs U.S. Environmental Protection Agency (US EPA), Washington DC, USA

Classification for bee toxicity

The US EPA also defines categories for environmental toxicity of pesticides[11]. US EPA defines a pesticide as highly toxic to bees if the LD 50 is lower that 2 microgram/bee (µg/bee). Pesticides highly toxic to bees are included in the PAN List of HHP.

Source used:

US EPA (2007b): Technical Overview of Ecological Risk Assessment Analysis Phase: Ecological Effects Characterization, U.S. Environmental Protection Agency, Washington, DC Website: www.epa.gov/oppefed1/ecorisk_ders/toera_analysis_eco.htm

EU categorization of endocrine disruptors

The issue of endocrine disrupting pesticides gained widespread public, political and scientific attention at the beginning of the 1990s. Today there are still no confirmed lists of pesticides with endocrine disrupting properties on any official national or international level (e.g. EU, WHO). However, the EU has developed a priority list of pesticides with evidence for endocrine disrupting properties.

In the PAN list of HHPs all EU Category 1 pesticides (at least one study providing evidence of endocrine disruption in an intact organism) and Category 2 pesticides (in vitro evidence of endocrine disruption) are included.

With Regulation 1107/2009/EC the European Union decided to exclude pesticide active ingredients from EU authorization, which have endocrine disrupting properties that may cause adverse effects in humans. By 14 December 2013, the European Commission shall present a draft of the measures concerning specific scientific criteria for the determination of endocrine disrupting properties. Pending the adoption of these criteria, substances that are or have to be classified, in accordance with the provisions of Regulation (EC) No 1272/2008, as carcinogenic category 2 and toxic for reproduction category 2, shall be considered to have endocrine disrupting properties (EC 2009a).

PAN International applies these preliminary criteria for the identification of endocrine disrupting chemicals and included pesticide which are classified in Regulation 1272/2008/EC as carcinogenic category 2 and toxic for reproduction category 2 as endocrine disruptors.

[10] Altenburger, R., Bödeker, W., Brückmann, S., Oetken, G., Weber, C. (1999): Zur Human- und Ökotoxizität von Pestiziden, die im Bananenanbau verwendet werden, Pestizid Aktions-Netzwerk e.V. (PAN Germany), Hamburg, Germany

[11] US EPA (2007): Technical Overview of Ecological Risk Assessment Analysis Phase: Ecological Effects Characterization, U.S. Environmental Protection Agency, Washington, DC www.epa.gov/oppefed1/ecorisk_ders/toera_analysis_eco.htm

Sources used:

EC (2000): Towards the establishment of a priority list of substances for further evaluation of their role in endocrine disruption - preparation of a candidate list of substances as a basis for priority setting, European Commission, Delft

EC (2004): Commission Staff Working Document SEC (2004) 1372 on implementation of the Community Strategy for Endocrine Disrupters - a range of substances suspected of interfering with the hormone systems of humans and wildlife (COM (1999) 706), European Commission, Brussels

EC (2007): Commission staff working document on the implementation of the "Community Strategy for Endocrine Disrupters" - a range of substances suspected of interfering with the hormone systems of humans and wildlife (COM (1999) 706), (COM (2001) 262) and (SEC (2004) 1372). SEC(2007) 1635. European Commission (EC).Brussels, 30.11.2007

EC (2008): Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. Official Journal of the European Union L 353/1

EC (2009a): Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. Official Journal of the European Union L 309. 24.11.2009

EC (2009b): Commission Regulation 790/2009 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labeling and packaging of substances and mixtures. Official Journal of the European Union L 235/1

International Conventions & Treaties on chemicals of high concern

The **Stockholm Convention** aims at the elimination of Persistent Organic Pollutants (POPs), some of the most unwanted chemicals in the world. POPs are toxic, bioaccumulative, highly persistent, capable of long-range transport and pose a global threat to living beings, especially in the Arctic region where they biomagnify. All pesticides formally adopted under these criteria to the Stockholm Convention are on the PAN HHP list.

The **Rotterdam Convention** on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade regulates the exchange of information in international trade in certain hazardous pesticides (active ingredients and formulations). All pesticides formally adopted under the Rotterdam Convention are on the PAN list of HHP.

Certain pesticide formulations are included in Annex 3 of the Rotterdam Convention. It is important to note that these active ingredients are on the PAN list even though they are regulated only in specific formulations. These active ingredients are marked in the attachment.

The **Montreal Protocol** on Substances that Deplete the Ozone Layer is an international treaty designed to protect the ozone layer by phasing out the production of a number of substances believed to be responsible for ozone depletion. Currently, there is one pesticide listed as ozone depleting chemical. This pesticide (methyl bromide) is on the PAN list of HHP.

Sources used:

Website of the Stockholm Convention at http://www.pops.int

Website of the Rotterdam Convention at http://www.pic.int

Website of Montreal Protocol at http://ozone.unep.org/

Ecosystem services – pollination by bees

The U.S. EPA Office of Pesticide Programs after reviewing individual toxicity or ecological effect studies for a pesticide summarizes the toxicity to certain species groups. In developing its ecological effect characterization, EPA uses a three-step scale of toxicity categories to classify pesticides based on bee toxicity data. All pesticides classified as 'highly toxic to bees' have been included to the HHP list by PAN.

Source used:

FOOTPRINT (2007): The FOOTPRINT Pesticide Properties DataBase. Database collated by the University of Hertfordshire as part of the EU-funded FOOTPRINT project (FP6-SSP-022704) (http://www.eu-footprint.org).

Method applied to identify highly hazardous pesticides

The classification systems and lists mentioned above have been integrated in a relational pesticide database consisting of numerous tables representing the classification systems and lists Matching fields between the tables are either CAS numbers or unique identification numbers (IDs). Data were usually imported from Excel, Access or PDF files. A table (list) of all pesticides is linked to all tables containing classification systems and lists mentioned above, and this table/list was searched for the criteria defining highly hazardous pesticides. Pesticides which are considered to be 'obsolete' by the WHO/IPCS were omitted from the search, if they are not targeted by any of the international conventions (Rotterdam Convention /PIC pesticides), Stockholm Convention/ POP pesticides).

The FOOTPRINT Pesticide Properties Database has been used to identify pesticides with the characteristics of being persistent, bioaccumulative and/or toxic to bees (LD50 <2 microgram/bee).

Pesticides listed by PAN International as Highly Hazardous

(January 2011)

For details on why the following pesticides are listed on the PAN List of Highly Hazardous Pesticides please see the table in the annex.

1,2,4-triazole
1,3-dichloropropene
2,4,5-T (2,4,5-trichlorophenoxy acetic acid)
2,4,5-T, butyric acid
2,4,5-trichlorophenol
2,4,6-trichlorophenol
2,4-D
2,4-DB
2,4-DP, isooctyl ester
2,6-Dichlorbenzamid
2-Mercaptobenzothiazole
3-CPA
Abamectin
Acephate
Acetochlor
Acifluorfen, sodium salt
Acrinathrin
Acrolein
Alachlor
Alanycarb
Aldicarb
Aldrin
Allethrin; Bioallethrin
alpha-BHC; alpha-HCH
Alpha-chlorohydrin
Aluminum phosphide
Amidosulfuron
Aminopyralid
Amitraz
Amitrole
Aniline
Anthracene oil
Arsenic acid
Arsenic pentoxide
Asulam
Asulam, sodium salt
Atrazine
Azafenidin
Azamethiphos
Azinphos-ethyl
Azinphos-methyl
Azobenzene
Azocyclotin
Azoxystrobin
Bendiocarb
Benfluralin
Benfuracarb
Benomyl
Bensulide
Bentazone
Benthiavalicarb-isopropyl
Beta-cyfluthrin; Cyfluthrin
beta-HCH; beta-BCH
Bifenthrin
Binapacryl
Bioresmethrin
Bis (chloroethyl) ether
Blasticidin-S
Borax; disodium tetraborate decahydrate
Boric acid
Boscalid
Brodifacoum
Bromacil
Bromadiolone
Bromethalin
Bromoxynil
Bromuconazole

Buprofezin
Butachlor
Butocarboxim
Butoxycarboxim
Cacodylic acid
Cadusafos
Captafol
Captan
Carbaryl
Carbendazim
Carbofuran
Carbosulfan
Chinomethionat; Oxythioquinox
Chlordane
Chlordimeform
Chlorethoxyphos
Chlorfenapyr
Chlorfenvinphos
Chlormephos
Chlorobenzilate
Chloroform
Chlorophacinone
Chloropicrin
Chlorothalonil
Chlorotoluron
Chlorphropham
Chlorpyrifos
Chlorpyrifos-methyl
Chlorthal-dimethyl
Chlozolinate
Cholecalciferol; Vitamin D3
Cinidon-ethyl
Clodinafop-propargyl
Clofencet
Clofentezine
Clopyralid
Clothianidin
Coconut diethanolamide
Coumaphos
Coumatetralyl
Creosote
Cumyluron
Cyanamide
Cyanazine
Cyhalothrin
Cyhalothrin, gamma
Cyhexatin
Cypermethrin
Cypermethrin, alpha
Cyproconazole
Cyromazine
Daminozide
DDT
Deltamethrin
Demeton-S-methyl
Diafenthiuron
Diazinon
Dichlobenil
Dichloro acetic acid
Dichlorophene
Dichlorprop-P
Dichlorvos; DDVP
Diclofop-methyl
Dicofol
Dicrotophos
Dieldrin
Difenacoum
Difenoconazole
Difethialone
Dimefuron
Dimethenamid
Dimethipin
Dimethoate
Dimethoxane
Dimoxystrobin
Dinocap

Dinoseb
Dinotefuran
Dinoterb
Diphacinone
Diquat dibromide
Diquat dichloride
Disulfoton
Dithianon
Diuron
DNOC
DNOC ammonium salt
DNOC potassium salt
DNOC, sodium salt
Doxorubicin
Edifenphos
Endosulfan
Endrin
E-Phosphamidon
Epichlorohydrin
EPN
Epoxiconazole
EPTC
Esbiothrin; S-Bioallethrin
Esfenvalerate
Ethaboxam
Ethalfluralin
Ethiofencarb
Ethiozin
Ethirimol
Ethofumesate
Ethoprophos; Ethoprop
Ethylene dibromide; 1,2-dibromoethane
Ethylene dichloride
Ethylene oxide
Ethylene thiourea
Etofenprox; Ethofenprox
Famphur
Fenamiphos
Fenarimol
Fenazaquin
Fenbuconazole
Fenbutatin-oxide
Fenchlorazole-ethyl
Fenitrothion
Fenothiocarb
Fenoxycarb
Fenpropathrin
Fenpropidin
Fenthion
Fentin acetate; Triphenyltin acetate
Fentin hydroxide; Triphenyltin hydroxide
Fenvalerate
Fipronil
Flocoumafen
Flonicamid
Fluazifop-butyl
Fluazinam
Flucythrinate
Fludioxonil
Flufenoxuron
Flumioxazin
Fluometuron
Fluopicolide
Fluoroacetamide
Flusilazole
Fluthiacet-methyl
Flutolanil
Folpet
Forchlorfenuron
Formaldehyde
Formetanate
Fosthiazate
Furathiocarb
Furfural
Furilazole
Glufosinate-ammonium

Glyphosate trimesium
Haloxyfop-methyl
(unstated stereochemistry)
Heptachlor
Heptachlor epoxide
Heptenophos
Hexachlorobenzene
Hexachloroethane
Hexaconazole
Hexaflumuron
Hexchlorocyclohexane
Hexythiazox
Hydramethylnon
Hydrazine
Imazalil
Imazaquin
Imazethapyr
Imidacloprid
Indoxacarb
Iodomethane
Ioxynil
Iprodione
Iprovalicarb
Isophorone
Isoproturon
Isoxaben
Isoxaflutole
Isoxathion
Ketoconazole
Kresoxim-methyl
Lactofen
Lambda-cyhalothrin
Lenacil
Lindane
Linuron
Lufenuron
Malathion
Mancozeb
Maneb
MCPA
MCPB
MCPP
Mecarbam
Mecoprop-P
Mepanipyrim
Mepronil
Mercuric chloride
Mercuric oxide
Mercury
Meta-cresol
Metaldehyde
Metam-potassium
Metam-sodium
Metazachlor
Metconazole
Methabenzthiazuron
Methamidophos
Methidathion
Methiocarb
Methomyl
Methoxychlor
Methyl bromide
Methyl isothiocyanate
Methylene chloride
Metiram
Metobromuron
Metolachlor
Metoxuron
Metrafenone
Metribuzin
Metronidazole
Metsulfuron-methyl
Mevinphos
MGK 326
Milbemectin
Mirex

Molinate
MON 4660
Monocrotophos
MSMA
Myclobutanil
Naled
Napropamide
Nicosulfuron
Nicotine
Nitenpyram
Nitrapyrin
Nitrobenzene
Nonylphenol
Norflurazon
Omethoate
Orthosulfamuron
Oryzalin
Oxadiazon
Oxadixyl
Oxamyl
Oxycarboxin
Oxydemeton-methyl
Oxyfluorfen
Paclobutrazol
Para-dichlorobenzene
Paraquat dichloride
Parathion
Parathion-methyl
P-chloroaniline
PCP
Penconazole
Pendimethalin
Penoxsulam
Pentachlorbenzene
Permethrin
Phenothrin
Phenthoate
Phorate
Phosmet
Phosphamidon
Phosphine
Picloram
Piperonyl butoxid
Pirimicarb
Pirimiphos-methyl
Polyhexamethylene biguanidine
Potasan
Prallethrin
Prochloraz
Procymidone
Prodiamine
Profenofos
Profoxydim
Prometryn
Propachlor
Propanil
Propargite
Propazine
Propetamphos
Propiconazole
Propoxur
Propylene oxide
Propyzamide
Prosulfocarb
Pymetrozine
Pyraclofos
Pyraflufen-ethyl
Pyrasulfotole
Pyrazophos
Pyrazoxon
Pyrethrins
Pyridaben
Pyridiphenthion
Pyrifenox
Pyrimethanil
Pyrithiobac-sodium

Quinalphos
Quinmerac
Quinoclamine
Quinoxyfen
Quintozene
Quizalofop-p-tefuryl
Resmethrin
Rotenone
Silafluofen
Silthiofam
Simazine
Sintofen
S-Metolachlor
Sodium arsenate
Sodium dimethyl dithio carbamate
Sodium fluoroacetate (1080)
Spinosad
Spirodiclofen
Strychnine
Sulfotep
TCMTB
Tebuconazole
Tebufenpyrad
Tebupirimifos
Tefluthrin
Tembotrione
Temephos
Tepraloxydim
Terbufos
Terbutryn
Terrazole; Etridiazole
Tetrachlorvinphos
Tetraconazole
Tetramethrin
Thiabendazole
Thiacloprid
Thiamethoxam
Thiazopyr
Thiodicarb
Thiofanox
Thiometon
Thiophanate-methyl
Thiourea
Thiram
Tolylfluanid
Topramezone
Toxaphene
Tralkoxydim
Tralomethrin
Triadimefon
Triadimenol
Tri-allate
Triasulfuron
Triazophos
Tribenuron methyl
Tribufos
Tributyltin compounds
Trichlorfon
Triclosan
Tricyclazole
Tridemorph
Tridiphane
Trifluralin
Triflusulfuron-methyl
Triforine
Triticonazole
Uniconazole
Validamycin
Vamidothion
Vinclozolin
Warfarin
XMC
zeta-Cypermethrin
Zineb
Ziram
Z-Phosphamidon

Comparison between the 2009 and 2010 PAN List of Highly Hazardous Pesticides

This new PAN International List of Highly Hazardous Pesticides is longer than the 1st version of the list dated January 16th, 2009. The reason is mainly that more pesticides are classified as toxic to bees and as persistent (62% of the new HHPs)

Newly added pesticides since January 2009

Alanycarb
Amidosulfuron
Asulam, sodium salt
Benfuracarb
Bensulide
beta-HCH; beta-BCH
Bioresmethrin
Blasticidin-S
Borax; disodium tetraborate decahydrate
Boric acid
Carbosulfan
Chlordimeform
Chlorphropham
Clopyralid
Cyhalothrin
Cyhalothrin, gamma
Diafenthiuron
Dimefuron
Dimoxystrobin
Dinotefuran
Diquat dichloride
Dithianon
E-Phosphamidon
EPTC
Ethaboxam
Ethirimol
Fenchlorazole-ethyl
Fenothiocarb
Fenpropidin
Flufenoxuron
Glufosinate-ammonium
Lenacil
Metazachlor
Metobromuron
Metoxuron
Metsulfuron-methyl
Milbemectin
Naled
Napropamide
Nicosulfuron
Nitenpyram
Nitrobenzene
Oxycarboxin
Penconazole
Pentachlorbenzene
Pirimiphos-methyl
Prallethrin
Profenofos
Pyraclofos
Pyrazophos
Pyridaben
Pyridiphenthion
Pyrifenox
Quinmerac
Rotenone
Silafluofen
Sintofen
Temephos
Tralomethrin
Tributyltin compounds
Tridiphane
Validamycin
XMC

Pesticides deleted from the PAN International List of Highly Hazardous Pesticides since January 2009

2,4-dichlorophenol
Bacillus subtilis GBO3
Chlordimeform hydrochloride
Chlorsulfuron
Sulfosulfuron

PAN International List of Highly Hazardous Pesticides - PAN Germany for PAN International -January 2011

				Group 1: Acute Toxicity				Group 2: Long term effects															Group 3: Environmental toxicity					Group 4: Conventions				
	CAS number	**Pesticide**	sum of max=1 in Groups 1-4	WHO Ia	WHO Ib	R26	**max = 1**	EPA carc	IARC carc	EU canc (1,2)	EU GHS (1A, 1B)	EPA prob likel carc	IARC prob carc	EPA poss carc	IARC poss carc	EU canc (3)	EU GHS (2)	EU muta (1,2)	EU GHS muta (1A, 1B)	EU repro (1,2)	EU GHS repro (1A ,1B)	EU EDC (1,2) or C2 & R2 GHS	**max = 1**	very bio acc	very pers water	very pers water sedi	highly toxic bees	**max = 1**	Montr Prot	PIC	See note below the table	POP	**max = 1**
0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
1	288-88-0	1,2,4-triazole	1				**0**																**0**		1	1		**1**					**0**
2	542-75-6	1,3-dichloropropene	1				**0**					1	1										**1**					**0**					**0**
3	93-76-5	2,4,5-T (2,4,5-trichloro phenoxy acetic acid)	2				**0**						1									1	**1**					**0**		1			**1**
4	93-80-1	2,4,5-T, butyric acid	1				**0**						1										**1**					**0**					**0**
5	95-95-4	2,4,5-trichlorophenol	1				**0**						1										**1**					**0**					**0**
6	88-06-2	2,4,6-trichlorophenol	1				**0**					1	1			1	1						**1**					**0**					**0**
7	94-75-7	2,4-D	1				**0**						1									1	**1**					**0**					**0**
8	94-82-6	2,4-DB	1				**0**						1									1	**1**					**0**					**0**
9	28631-35-8	2,4-DP, isooctyl ester	1				**0**						1										**1**					**0**					**0**
10	2008-58-4	2,6-Dichlorbenzamid	1				**0**																**0**		1	1		**1**					**0**
11	149-30-4	2-Mercaptoben-zothiazole	1				**0**							1									**1**					**0**					**0**
12	101-10-0	3-CPA	1				**0**						1										**1**					**0**					**0**
13	71751-41-2	Abamectin	1				**0**																**0**				1	**1**					**0**
14	30560-19-1	Acephate	2				**0**							1								1	**1**				1	**1**					**0**
15	34256-82-1	Acetochlor	1				**0**							1								1	**1**					**0**					**0**
16	62476-59-9	Acifluorfen, sodium salt	1				**0**							1									**1**					**0**					**0**
17	101007-06-1	Acrinathrin	1				**0**																**0**	1			1	**1**					**0**
18	107-02-8	Acrolein	2		1	1	**1**							1									**1**					**0**					**0**
19	15972-60-8	Alachlor	1				**0**							1		1	1					1	**1**					**0**					**0**
20	83130-01-2	Alanycarb	1				**0**																**0**				1	**1**					**0**
21	116-06-3	Aldicarb	3	1		1	**1**															1	**1**				1	**1**					**0**
22	309-00-2	Aldrin	3				**0**					1				1	1					1	**1**				1	**1**		1		1	**1**
23	584-79-2	Allethrin; Bioallethrin	1				**0**							1								1	**1**					**0**					**0**
24	319-84-6	alpha-BHC; alpha-HCH	2				**0**						1										**1**					**0**				1	**1**
25	96-24-2	Alpha-chlorohydrin	1		1		**1**																**0**					**0**					**0**
26	20859-73-8	Aluminum phosphide	1				**0**																**0**				1	**1**					**0**

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				Group 1: Acute Toxicity				Group 2: Long term effects															Group 3: Environmental toxicity					Group 4: Conventions				
	CAS number	**Pesticide**	sum of max=1 in Groups 1-4	WHO Ia	WHO Ib	R26	**max = 1**	EPA carc	IARC carc	EU canc (1,2)	EU GHS (1A, 1B)	EPA prob likel carc	IARC prob carc	EPA poss carc	IARC poss carc	EU canc (3)	EU GHS (2)	EU muta (1,2)	EU GHS muta (1A, 1B)	EU repro (1,2)	EU GHS repro (1A ,1B)	EU EDC (1,2) or C2 & R2 GHS	**max = 1**	very bio acc	very pers water	very pers water sedi	highly toxic bees	**max = 1**	Montr Prot	PIC	See note below the table	POP	**max = 1**
0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
27	120923-37-7	Amidosulfuron	1				0																0		1			1					0
28	150114-71-9	Aminopyralid	1				0																0		1	1		1					0
29	33089-61-1	Amitraz	1				0							1									1					0					0
30	61-82-5	Amitrole	2				0							1								1	1		1	1		1					0
31	62-53-3	Aniline	1				0					1				1	1						1					0					0
32	90640-80-5	Anthracene oil	1				0			1	1												1					0					0
33	7778-39-4	Arsenic acid	1				0	1	1														1					0					0
34	1303-28-2	Arsenic pentoxide	1				0	1	1	1	1												1					0					0
35	3337-71-1	Asulam	1				0							1									1					0					0
36	2302-17-2	Asulam, sodium salt	1				0																0		1			1					0
37	1912-24-9	Atrazine	1				0															1	1					0					0
38	68049-83-2	Azafenidin	1				0													1	1		1					0					0
39	35575-96-3	Azamethiphos	1				0																0				1	1					0
40	2642-71-9	Azinphos-ethyl	2		1		1																0				1	1					0
41	86-50-0	Azinphos-methyl	2		1	1	1																0				1	1					0
42	103-33-3	Azobenzene	1				0			1	1	1											1					0					0
43	41083-11-8	Azocyclotin	2			1	1																0	1				1					0
44	131860-33-8	Azoxystrobin	1				0																0			1		1					0
45	22781-23-3	Bendiocarb	1				0																0				1	1					0
46	1861-40-1	Benfluralin	1				0							1									1					0					0
47	82560-54-1	Benfuracarb	1				0																0				1	1					0
48	17804-35-2	Benomyl	2				0							1				1	1	1	1		1					0		1	X		1
49	741-58-2	Bensulide	1				0																0				1	1					0
50	25057-89-0	Bentazone	1				0																0		1	1		1					0
51	177406-68-7	Benthiavalicarb-isopropyl	1				0					1											1					0					0
52	68359-37-5	Beta-cyfluthrin; Cyfluthrin	2		1	1	1																0				1	1					0
53	319-85-7	beta-HCH; beta-BCH	2				0															1	1					0				1	1
54	82657-04-3	Bifenthrin	2				0							1								1	1	1		1	1	1					0

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				Group 1: Acute Toxicity				Group 2: Long term effects															Group 3: Environmental toxicity					Group 4: Conventions				
	CAS number	**Pesticide**	sum of max=1 in Groups 1-4	WHO Ia	WHO Ib	R26	**max = 1**	EPA carc	IARC carc	EU canc (1,2)	EU GHS (1A, 1B)	EPA prob likel carc	IARC prob carc	EPA poss carc	IARC poss carc	EU canc (3)	EU GHS (2)	EU muta (1,2)	EU GHS muta (1A, 1B)	EU repro (1,2)	EU GHS repro (1A ,1B)	EU EDC (1,2) or C2 & R2 GHS	**max = 1**	very bio acc	very pers water	very pers water sedi	highly toxic bees	**max = 1**	Montr Prot	PIC	See note below the table	POP	**max = 1**
0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
55	485-31-4	Binapacryl	2				**0**													1	1		**1**					**0**		1			**1**
56	28434-01-7	Bioresmethrin	1				**0**																**0**				1	**1**					**0**
57	111-44-4	Bis (chloroethyl) ether	2			1	**1**					1											**1**					**0**					**0**
58	2079-00-7	Blasticidin-S	1		1		**1**																**0**					**0**					**0**
59	1303-96-4	Borax; disodium tetraborate decahydrate	1				**0**													1	1		**1**					**0**					**0**
60	10043-35-3	Boric acid	1				**0**													1	1	1	**1**					**0**					**0**
61	188425-85-6	Boscalid	1				**0**							1									**1**					**0**					**0**
62	56073-10-0	Brodifacoum	1	1			**1**																**0**					**0**					**0**
63	314-40-9	Bromacil	1				**0**							1									**1**					**0**					**0**
64	28772-56-7	Bromadiolone	1	1			**1**																**0**					**0**					**0**
65	63333-35-7	Bromethalin	2	1			**1**																**0**	1				**1**					**0**
66	1689-84-5	Bromoxynil	2			1	**1**							1								1	**1**					**0**					**0**
67	116255-48-2	Bromuconazole	1				**0**																**0**			1		**1**					**0**
68	69327-76-0	Buprofezin	1				**0**							1									**1**					**0**					**0**
69	23184-66-9	Butachlor	1				**0**					1											**1**					**0**					**0**
70	34681-10-2	Butocarboxim	1				**0**																**0**				1	**1**					**0**
71	34681-23-7	Butoxycarboxim	1		1		**1**																**0**					**0**					**0**
72	75-60-5	Cacodylic acid	1				**0**		1			1											**1**					**0**					**0**
73	95465-99-9	Cadusafos	2		1		**1**																**0**			1	1	**1**					**0**
74	2425-06-1	Captafol	3	1			**1**			1	1	1			1								**1**					**0**		1			**1**
75	133-06-2	Captan	1				**0**							1		1	1						**1**					**0**					**0**
76	63-25-2	Carbaryl	2				**0**					1				1	1					1	**1**				1	**1**					**0**
77	10605-21-7	Carbendazim	1				**0**							1				1	1	1	1	1	**1**					**0**					**0**
78	1563-66-2	Carbofuran	4		1	1	**1**															1	**1**				1	**1**		1	X		**1**
79	55285-14-8	Carbosulfan	2			1	**1**																**0**				1	**1**					**0**
80	2439-01-2	Chinomethionat; Oxythioquinox	1				**0**					1											**1**					**0**					**0**

PAN International List of Highly Hazardous Pesticides - PAN Germany for PAN International -January 2011

				Group 1: Acute Toxicity				Group 2: Long term effects															Group 3: Environmental toxicity					Group 4: Conventions				
	CAS number	Pesticide	sum of max=1 in Groups 1-4	WHO Ia	WHO Ib	R26	max = 1	EPA carc	IARC carc	EU canc (1,2)	EU GHS (1A, 1B)	EPA prob likel carc	IARC prob carc	EPA poss carc	IARC poss carc	EU canc (3)	EU GHS (2)	EU muta (1,2)	EU GHS muta (1A, 1B)	EU repro (1,2)	EU GHS repro (1A ,1B)	EU EDC (1,2) or C2 & R2 GHS	max = 1	very bio acc	very pers water	very pers water sedi	highly toxic bees	max = 1	Montr Prot	PIC	See note below the table	POP	max = 1
0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
81	57-74-9	Chlordane	3				0					1	1			1	1						1	1				1		1		1	1
82	6164-98-3	Chlordimeform	2				0					1				1	1					1	1					0		1			1
83	54593-83-8	Chlorethoxyphos	2	1			1																0				1	1					0
84	122453-73-0	Chlorfenapyr	2				0							1									1				1	1					0
85	470-90-6	Chlorfenvinphos	3		1		1															1	1				1	1					0
86	24934-91-6	Chlormephos	1	1			1																0					0					0
87	510-15-6	Chlorobenzilate	1				0																0					0		1			1
88	67-66-3	Chloroform	1				0					1	1			1	1						1					0					0
89	3691-35-8	Chlorophacinone	1	1			1																0					0					0
90	76-06-2	Chloropicrin	1			1	1																0					0					0
91	1897-45-6	Chlorothalonil	2			1	1					1	1			1	1						1					0					0
92	15545-48-9	Chlorotoluron	2				0									1	1					1	1			1		1					0
93	101-21-3	Chlorphropham	1				0									1	1						1					0					0
94	2921-88-2	Chlorpyrifos	1				0																0				1	1					0
95	5598-13-0	Chlorpyrifos-methyl	1				0																0				1	1					0
96	1861-32-1	Chlorthal-dimethyl	1				0							1									1					0					0
97	84332-86-5	Chlozolinate	1				0									1	1						1					0					0
98	67-97-0	Cholecalciferol; Vitamin D3	1				0																0	1				1					0
99	142891-20-1	Cinidon-ethyl	1				0									1	1						1					0					0
100	105512-06-9	Clodinafop-propargyl	1				0							1									1					0					0
101	82697-71-0	Clofencet	1				0							1									1					0					0
102	74115-24-5	Clofentezine	1				0							1									1					0					0
103	1702-17-6	Clopyralid	1				0																0		1			1					0
104	210880-92-5	Clothianidin	1				0																0				1	1					0
105	68603-42-9	Coconut diethanolamide	1				0					1											1					0					0
106	56-72-4	Coumaphos	1		1		1																0					0					0
107	5836-29-3	Coumatetralyl	1		1		1																0					0					0
108	8001-58-9	Creosote	1				0			1	1	1			1								1					0					0

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				Group 1: Acute Toxicity				Group 2: Long term effects															Group 3: Environmental toxicity					Group 4: Conventions				
	CAS number	**Pesticide**	sum of max=1 in Groups 1-4	WHO Ia	WHO Ib	R26	**max = 1**	EPA carc	IARC carc	EU canc (1,2)	EU GHS (1A, 1B)	EPA prob likel carc	IARC prob carc	EPA poss carc	IARC poss carc	EU canc (3)	EU GHS (2)	EU muta (1,2)	EU GHS muta (1A, 1B)	EU repro (1,2)	EU GHS repro (1A ,1B)	EU EDC (1,2) or C2 & R2 GHS	**max = 1**	very bio acc	very pers water	very pers water sedi	highly toxic bees	**max = 1**	Montr Prot	PIC	See note below the table	POP	**max = 1**
0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
109	99485-76-4	Cumyluron	1				0							1									1					0					0
110	420-04-2	Cyanamide	1				0							1									1					0					0
111	21725-46-2	Cyanazine	1				0							1								1	1					0					0
112	68085-85-8	Cyhalothrin	1				0																0				1	1					0
113	76703-62-3	Cyhalothrin, gamma	1				0																0				1	1					0
114	13121-70-5	Cyhexatin	1				0																0	1				1					0
115	65731-84-2	Cypermethrin	1				0																0				1	1					0
116	67375-30-8	Cypermethrin, alpha	1				0																0				1	1					0
117	94361-06-5	Cyproconazole	2				0							1									1		1	1		1					0
118	66215-27-8	Cyromazine	1				0																0			1		1					0
119	1596-84-5	Daminozide	1				0					1											1					0					0
120	50-29-3	DDT	2				0					1	1			1	1					1	1					0		1		1	1
121	52918-63-5	Deltamethrin	2				0															1	1				1	1					0
122	919-86-8	Demeton-S-methyl	2		1		1																0				1	1					0
123	80060-09-9	Diafenthiuron	1				0																0				1	1					0
124	333-41-5	Diazinon	2				0															1	1				1	1					0
125	1194-65-6	Dichlobenil	1				0							1									1					0					0
126	79-43-6	Dichloro acetic acid	1				0						1										1					0					0
127	97-23-4	Dichlorophene	1				0						1										1					0					0
128	15165-67-0	Dichlorprop-P	1				0						1										1					0					0
129	62-73-7	Dichlorvos; DDVP	3		1	1	1						1	1									1				1	1					0
130	51338-27-3	Diclofop-methyl	1				0					1											1					0					0
131	115-32-2	Dicofol	2				0							1								1	1	1				1					0
132	141-66-2	Dicrotophos	3		1		1							1									1				1	1					0
133	60-57-1	Dieldrin	3				0					1				1	1					1	1	1			1	1		1		1	1
134	56073-07-5	Difenacoum	2	1			1																0	1				1					0
135	119446-68-3	Difenoconazole	2				0							1									1			1		1					0
136	104653-34-1	Difethialone	2	1			1																0	1				1					0

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0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
137	34205-21-5	Dimefuron	1				**0**																**0**		1			**1**					**0**
138	87674-68-8	Dimethenamid	1				**0**							1									**1**					**0**					**0**
139	55290-64-7	Dimethipin	2				**0**							1									**1**		1			**1**					**0**
140	60-51-5	Dimethoate	2				**0**							1								1	**1**				1	**1**					**0**
141	828-00-2	Dimethoxane	1				**0**							1									**1**					**0**					**0**
142	149961-52-4	Dimoxystrobin	1				**0**									1	1					1	**1**					**0**					**0**
143	39300-45-3	Dinocap	1				**0**													1	1		**1**					**0**					**0**
144	88-85-7	Dinoseb	2				**0**							1						1	1		**1**					**0**		1			**1**
145	165252-70-0	Dinotefuran	1				**0**																**0**				1	**1**					**0**
146	1420-07-1	Dinoterb	2		1		**1**													1	1		**1**					**0**					**0**
147	82-66-6	Diphacinone	1	1			**1**																**0**					**0**					**0**
148	85-00-7	Diquat dibromide	1			1	**1**																**0**					**0**					**0**
149	4032-26-2	Diquat dichloride	1			1	**1**																**0**					**0**					**0**
150	298-04-4	Disulfoton	1	1			**1**																**0**					**0**					**0**
151	3347-22-6	Dithianon	1				**0**							1									**1**					**0**					**0**
152	330-54-1	Diuron	1				**0**					1				1	1					1	**1**					**0**					**0**
153	534-52-1	DNOC	2		1	1	**1**																**0**					**0**		1			**1**
154	2980-64-5	DNOC ammonium salt	2		1	1	**1**																**0**					**0**		1			**1**
155	5787-96-2	DNOC potassium salt	2		1		**1**																**0**					**0**		1			**1**
156	2312-76-7	DNOC, sodium salt	2		1		**1**																**0**					**0**		1			**1**
157	23214-92-8	Doxorubicin	1				**0**								1								**1**					**0**					**0**
158	17109-49-8	Edifenphos	1		1		**1**																**0**					**0**					**0**
159	115-29-7	Endosulfan	2			1	**1**															1	**1**					**0**					**0**
160	72-20-8	Endrin	2				**0**															1	**1**					**0**				1	**1**
161	297-99-4	E-Phosphamidon	1	1			**1**																**0**					**0**					**0**
162	106-89-8	Epichlorohydrin	1				**0**			1	1	1			1							1	**1**					**0**					**0**
163	2104-64-5	EPN	1	1			**1**																**0**					**0**					**0**
164	133855-98-8	Epoxiconazole	2				**0**					1				1	1					1	**1**		1			**1**					**0**

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0				**28**	**51**	**40**		**3**	**6**	**12**	**11**	**81**	**38**	**113**	**5**	**53**	**53**	**4**	**4**	**21**	**21**	**98**		**23**	**39**	**45**	**112**		**1**	**32**		**13**	
165	759-94-4	EPTC	1				**0**																**0**				1	**1**					**0**
166	28434-00-6	Esbiothrin; S-Bioallethrin	1				**0**							1									**1**					**0**					**0**
167	66230-04-4	Esfenvalerate	1				**0**																**0**				1	**1**					**0**
168	162650-77-3	Ethaboxam	1				**0**							1									**1**					**0**					**0**
169	55283-68-6	Ethalfluralin	1				**0**							1									**1**					**0**					**0**
170	29973-13-5	Ethiofencarb	1		1		**1**																**0**					**0**					**0**
171	64529-56-2	Ethiozin	1				**0**							1									**1**					**0**					**0**
172	23947-60-6	Ethirimol	1				**0**																**0**				1	**1**					**0**
173	26225-79-6	Ethofumesate	1				**0**																**0**			1		**1**					**0**
174	13194-48-4	Ethoprophos; Ethoprop	2	1		1	**1**					1											**1**					**0**					**0**
175	106-93-4	Ethylene dibromide; 1,2-dibromoethane	2				**0**			1	1	1			1							1	**1**					**0**		1			**1**
176	107-06-2	Ethylene dichloride	2				**0**					1	1										**1**					**0**		1			**1**
177	75-21-8	Ethylene oxide	2				**0**		1	1	1							1	1				**1**					**0**		1			**1**
178	96-45-7	Ethylene thiourea	1				**0**					1								1	1	1	**1**					**0**					**0**
179	80844-07-1	Etofenprox; Ethofenprox	2				**0**							1									**1**				1	**1**					**0**
180	52-85-7	Famphur	1		1		**1**																**0**					**0**					**0**
181	22224-92-6	Fenamiphos	2		1		**1**																**0**				1	**1**					**0**
182	60168-88-9	Fenarimol	1				**0**															1	**1**					**0**					**0**
183	120928-09-8	Fenazaquin	1				**0**																**0**				1	**1**					**0**
184	114369-43-6	Fenbuconazole	1				**0**							1									**1**					**0**					**0**
185	13356-08-6	Fenbutatin-oxide	2			1	**1**																**0**			1		**1**					**0**
186	103112-35-2	Fenchlorazole-ethyl	1				**0**			1													**1**					**0**					**0**
187	122-14-5	Fenitrothion	2				**0**															1	**1**				1	**1**					**0**
188	62850-32-2	Fenothiocarb	1				**0**																**0**				1	**1**					**0**
189	72490-01-8	Fenoxycarb	2				**0**					1										1	**1**				1	**1**					**0**
190	39515-41-8	Fenpropathrin	2			1	**1**																**0**				1	**1**					**0**
191	67306-00-7	Fenpropidin	1				**0**							1									**1**					**0**					**0**

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192	55-38-9	Fenthion	1				0																0				1	1					0
193	900-95-8	Fentin acetate; Triphenyltin acetate	2			1	1									1	1					1	1					0					0
194	76-87-9	Fentin hydroxide; Triphenyltin hydroxide	2			1	1					1				1	1					1	1					0					0
195	51630-58-1	Fenvalerate	2				0															1	1				1	1					0
196	120068-37-3	Fipronil	2				0							1									1				1	1					0
197	90035-08-8	Flocoumafen	1	1		1	1																0					0					0
198	158062-67-0	Flonicamid	1				0							1									1					0					0
199	69806-50-4	Fluazifop-butyl	1				0													1	1		1					0					0
200	79622-59-6	Fluazinam	1				0							1									1					0					0
201	70124-77-5	Flucythrinate	2		1		1																0	1			1	1					0
202	131341-86-1	Fludioxonil	1				0																0			1		1					0
203	101463-69-8	Flufenoxuron	1				0																0	1				1					0
204	103361-09-7	Flumioxazin	1				0													1	1		1					0					0
205	2164-17-2	Fluometuron	2				0							1									1		1	1		1					0
206	239110-15-7	Fluopicolide	1				0																0		1	1		1					0
207	640-19-7	Fluoroacetamide	2		1		1																0					0		1			1
208	85509-19-9	Flusilazole	2				0									1	1			1	1		1			1		1					0
209	117337-19-6	Fluthiacet-methyl	1				0					1											1					0					0
210	66332-96-5	Flutolanil	1				0																0		1	1		1					0
211	133-07-3	Folpet	1				0					1				1	1						1					0					0
212	68157-60-8	Forchlorfenuron	1				0									1	1						1					0					0
213	50-00-0	Formaldehyde	1				0		1			1				1	1						1					0					0
214	22259-30-9	Formetanate	2		1	1	1																0				1	1					0
215	98886-44-3	Fosthiazate	1				0																0				1	1					0
216	65907-30-4	Furathiocarb	1		1	1	1																0					0					0
217	98-01-1	Furfural	1				0									1	1						1					0					0

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218	121776-33-8	Furilazole	1				0					1											1					0					0
219	77182-82-2	Glufosinate-ammonium	1				0													1	1		1					0					0
220	81591-81-3	Glyphosate trimesium	1				0																0			1		1					0
221	69806-40-2	Haloxyfop-methyl (unstated stereochemistry)	1				0					1											1					0					0
222	76-44-8	Heptachlor	3				0					1	1			1	1					1	1	1				1		1		1	1
223	1024-57-3	Heptachlor epoxide	1				0					1				1	1						1					0					0
224	23560-59-0	Heptenophos	1		1		1																0					0					0
225	118-74-1	Hexachlorobenzene	4	1			1			1	1	1	1									1	1	1				1		1		1	1
226	67-72-1	Hexachloroethane	1				0						1	1									1					0					0
227	79983-71-4	Hexaconazole	2				0							1									1		1		1	1					0
228	86479-06-3	Hexaflumuron	1				0																0				1	1					0
229	608-73-1	Hexchlorocyclohexane	2				0					1	1									1	1					0		1			1
230	78587-05-0	Hexythiazox	1				0					1											1					0					0
231	67485-29-4	Hydramethylnon	2				0							1									1	1				1					0
232	302-01-2	Hydrazine	1				0			1	1		1										1					0					0
233	35554-44-0	Imazalil	1				0					1											1					0					0
234	81335-37-7	Imazaquin	1				0																0		1	1		1					0
235	81335-77-5	Imazethapyr	1				0																0				1	1					0
236	138261-41-3	Imidacloprid	1				0																0				1	1					0
237	173584-44-6	Indoxacarb	1				0																0				1	1					0
238	74-88-4	Iodomethane	1				0							1		1	1						1					0					0
239	1689-83-4	Ioxynil	1				0															1	1					0					0
240	36734-19-7	Iprodione	1				0					1				1	1					1	1					0					0
241	140923-17-7	Iprovalicarb	2				0					1											1			1		1					0
242	78-59-1	Isophorone	1				0							1		1	1						1					0					0
243	34123-59-6	Isoproturon	1				0									1	1						1					0					0
244	82558-50-7	Isoxaben	1				0							1									1					0					0

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245	141112-29-0	Isoxaflutole	1				**0**					1											**1**					**0**					**0**
246	18854-01-8	Isoxathion	2		1		**1**																**0**				1	**1**					**0**
247	65277-42-1	Ketoconazole	1				**0**													1	1	1	**1**					**0**					**0**
248	143390-89-0	Kresoxim-methyl	1				**0**					1				1	1						**1**					**0**					**0**
249	77501-63-4	Lactofen	1				**0**							1									**1**					**0**					**0**
250	91465-08-6	Lambda-cyhalothrin	3			1	**1**															1	**1**				1	**1**					**0**
251	2164-08-1	Lenacil	1				**0**																**0**		1			**1**					**0**
252	58-89-9	Lindane	3				**0**						1	1								1	**1**				1	**1**		1		1	**1**
253	330-55-2	Linuron	1				**0**							1		1	1			1	1	1	**1**					**0**					**0**
254	103055-07-8	Lufenuron	1				**0**																**0**	1	1			**1**					**0**
255	121-75-5	Malathion	2				**0**							1								1	**1**				1	**1**					**0**
256	8018-01-7	Mancozeb	1				**0**					1										1	**1**					**0**					**0**
257	12427-38-2	Maneb	1				**0**					1										1	**1**					**0**					**0**
258	94-74-6	MCPA	1				**0**						1										**1**					**0**					**0**
259	94-81-5	MCPB	1				**0**						1										**1**					**0**					**0**
260	7085-19-0	MCPP	1				**0**						1										**1**					**0**					**0**
261	2595-54-2	Mecarbam	1		1		**1**																**0**					**0**					**0**
262	16484-77-8	Mecoprop-P	1				**0**						1	1									**1**					**0**					**0**
263	110235-47-7	Mepanipyrim	1				**0**					1				1	1						**1**					**0**					**0**
264	55814-41-0	Mepronil	1				**0**																**0**				1	**1**					**0**
265	7487-94-7	Mercuric chloride	1	1			**1**																**0**					**0**					**0**
266	21908-53-2	Mercuric oxide	1		1		**1**																**0**					**0**					**0**
267	7439-97-6	Mercury	2			1	**1**																**0**					**0**		1			**1**
268	108-39-4	Meta-cresol	1				**0**							1									**1**					**0**					**0**
269	108-62-3	Metaldehyde	1				**0**							1									**1**					**0**					**0**
270	137-41-7	Metam-potassium	1				**0**					1											**1**					**0**					**0**
271	137-42-8	Metam-sodium	1				**0**					1										1	**1**					**0**					**0**
272	67129-08-2	Metazachlor	1				**0**																**0**		1			**1**					**0**

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				Group 1: Acute Toxicity				Group 2: Long term effects															Group 3: Environmental toxicity					Group 4: Conventions				
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0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
273	125116-23-6	Metconazole	1				0																0			1		1					0
274	18691-97-9	Methabenzthiazuron	1				0																0		1	1	1	1					0
275	10265-92-6	Methamidophos	3		1	1	1																0				1	1		1	X		1
276	950-37-8	Methidathion	3		1		1							1									1				1	1					0
277	2032-65-7	Methiocarb	2		1		1																0				1	1					0
278	16752-77-5	Methomyl	3		1		1															1	1				1	1					0
279	72-43-5	Methoxychlor	1				0															1	1					0					0
280	74-83-9	Methyl bromide	2				0															1	1					0	1				1
281	556-61-6	Methyl isothiocyanate	1				0					1											1					0					0
282	75-09-2	Methylene chloride	1				0					1	1			1	1						1					0					0
283	9006-42-2	Metiram	1				0					1										1	1					0					0
284	3060-89-7	Metobromuron	1				0																0		1			1					0
285	51218-45-2	Metolachlor	2				0							1									1		1	1		1					0
286	19937-59-8	Metoxuron	1				0																0		1			1					0
287	220899-03-6	Metrafenone	1				0							1									1					0					0
288	21087-64-9	Metribuzin	1				0															1	1					0					0
289	443-48-1	Metronidazole	1				0						1										1					0					0
290	74223-64-6	Metsulfuron-methyl	1				0																0		1			1					0
291	7786-34-7	Mevinphos	3	1			1															1	1				1	1					0
292	136-45-8	MGK 326	1				0					1											1					0					0
293	nocas 1562	Milbemectin	1				0																0				1	1					0
294	2385-85-5	Mirex	3				0						1			1	1					1	1	1				1				1	1
295	2212-67-1	Molinate	1				0							1		1	1					1	1					0					0
296	71526-07-3	MON 4660	1				0					1											1					0					0
297	6923-22-4	Monocrotophos	3		1	1	1																0				1	1		1	X		1
298	2163-80-6	MSMA	1				0		1														1					0					0
299	88671-89-0	Myclobutanil	1				0																0			1		1					0
300	300-76-5	Naled	1				0																0				1	1					0

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0				**28**	**51**	**40**		**3**	**6**	**12**	**11**	**81**	**38**	**113**	**5**	**53**	**53**	**4**	**4**	**21**	**21**	**98**		**23**	**39**	**45**	**112**		**1**	**32**		**13**	
301	15299-99-7	Napropamide	1				**0**																**0**			1		**1**					**0**
302	111991-09-4	Nicosulfuron	1				**0**																**0**		1			**1**					**0**
303	54-11-5	Nicotine	1		1		**1**																**0**					**0**					**0**
304	150824-47-8	Nitenpyram	1				**0**																**0**				1	**1**					**0**
305	1929-82-4	Nitrapyrin	1				**0**					1											**1**					**0**					**0**
306	98-95-3	Nitrobenzene	1				**0**						1			1	1					1	**1**					**0**					**0**
307	25154-52-3	Nonylphenol	0				**0**																**0**					**0**					**0**
308	27314-13-2	Norflurazon	1				**0**							1									**1**					**0**					**0**
309	1113-02-6	Omethoate	3		1		**1**															1	**1**				1	**1**					**0**
310	213464-77-8	Orthosulfamuron	1				**0**							1									**1**					**0**					**0**
311	19044-88-3	Oryzalin	1				**0**					1											**1**					**0**					**0**
312	19666-30-9	Oxadiazon	1				**0**							1									**1**					**0**					**0**
313	77732-09-3	Oxadixyl	1				**0**							1									**1**					**0**					**0**
314	23135-22-0	Oxamyl	2		1	1	**1**																**0**				1	**1**					**0**
315	5259-88-1	Oxycarboxin	1				**0**																**0**		1	1		**1**					**0**
316	301-12-2	Oxydemeton-methyl	2		1		**1**																**0**				1	**1**					**0**
317	42874-03-3	Oxyfluorfen	1				**0**							1									**1**					**0**					**0**
318	76738-62-0	Paclobutrazol	1				**0**																**0**		1	1	1	**1**					**0**
319	106-46-7	Para-dichlorobenzene	1				**0**						1			1	1						**1**					**0**					**0**
320	1910-42-5	Paraquat dichloride	1			1	**1**																**0**					**0**					**0**
321	56-38-2	Parathion	3	1			**1**							1								1	**1**				1	**1**					**0**
322	298-00-0	Parathion-methyl	3	1		1	**1**															1	**1**					**0**		1			**1**
323	106-47-8	P-chloroaniline	1				**0**			1	1	1	1										**1**					**0**					**0**
324	87-86-5	PCP	3		1	1	**1**					1	1			1	1					1	**1**					**0**		1			**1**
325	66246-88-6	Penconazole	1				**0**																**0**			1		**1**					**0**
326	40487-42-1	Pendimethalin	2				**0**							1									**1**	1				**1**					**0**
327	219714-96-2	Penoxsulam	1				**0**							1									**1**					**0**					**0**
328	608-93-5	Pentachlorbenzene	2				**0**															1	**1**					**0**				1	**1**

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0				**28**	**51**	**40**		**3**	**6**	**12**	**11**	**81**	**38**	**113**	**5**	**53**	**53**	**4**	**4**	**21**	**21**	**98**		**23**	**39**	**45**	**112**		**1**	**32**		**13**	
329	52645-53-1	Permethrin	2				**0**					1										1	**1**				1	**1**					**0**
330	26002-80-2	Phenothrin	1				**0**															1	**1**					**0**					**0**
331	2597-03-7	Phenthoate	2				**0**															1	**1**				1	**1**					**0**
332	298-02-2	Phorate	2	1			**1**																**0**				1	**1**					**0**
333	732-11-6	Phosmet	2				**0**							1									**1**				1	**1**					**0**
334	13171-21-6	Phosphamidon	4	1			**1**							1								1	**1**				1	**1**		1			**1**
335	7803-51-2	Phosphine	1			1	**1**																**0**					**0**					**0**
336	1918-02-1	Picloram	2				**0**															1	**1**		1	1		**1**					**0**
337	51-03-6	Piperonyl butoxid	1				**0**							1								1	**1**					**0**					**0**
338	23103-98-2	Pirimicarb	2				**0**					1											**1**			1		**1**					**0**
339	29232-93-7	Pirimiphos-methyl	1				**0**																**0**				1	**1**					**0**
340	32289-58-0	Polyhexamethylene biguanidine	1				**0**							1									**1**					**0**					**0**
341	299-45-6	Potasan	1			1	**1**																**0**					**0**					**0**
342	23031-36-9	Prallethrin	1				**0**																**0**				1	**1**					**0**
343	67747-09-5	Prochloraz	2				**0**							1								1	**1**		1	1		**1**					**0**
344	32809-16-8	Procymidone	1				**0**					1										1	**1**					**0**					**0**
345	29091-21-2	Prodiamine	1				**0**							1									**1**					**0**					**0**
346	41198-08-7	Profenofos	1				**0**																**0**				1	**1**					**0**
347	139001-49-3	Profoxydim	1				**0**									1	1					1	**1**					**0**					**0**
348	7287-19-6	Prometryn	1				**0**															1	**1**					**0**					**0**
349	1918-16-7	Propachlor	1				**0**					1											**1**					**0**					**0**
350	709-98-8	Propanil	1				**0**							1								1	**1**					**0**					**0**
351	2312-35-8	Propargite	2				**0**					1				1	1						**1**	1				**1**					**0**
352	139-40-2	Propazine	2				**0**									1	1						**1**		1			**1**					**0**
353	31218-83-4	Propetamphos	1		1		**1**																**0**					**0**					**0**
354	60207-90-1	Propiconazole	2				**0**							1									**1**			1		**1**					**0**
355	114-26-1	Propoxur	2				**0**					1											**1**				1	**1**					**0**

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0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
356	75-56-9	Propylene oxide	1				0					1						1	1				1					0					0
357	23950-58-5	Propyzamide	1				0					1				1	1						1					0					0
358	52888-80-9	Prosulfocarb	1				0																0			1		1					0
359	123312-89-0	Pymetrozine	1				0					1				1	1						1					0					0
360	77458-01-6	Pyraclofos	1				0																0				1	1					0
361	129630-19-9	Pyraflufen-ethyl	1				0					1											1					0					0
362	365400-11-9	Pyrasulfotole	2				0							1									1		1	1		1					0
363	13457-18-6	Pyrazophos	1				0																0				1	1					0
364	108-34-9	Pyrazoxon	1			1	1																0					0					0
365	121-21-1	Pyrethrins	1				0							1								1	1					0					0
366	96489-71-3	Pyridaben	1				0																0				1	1					0
367	119-12-0	Pyridiphenthion	1				0																0				1	1					0
368	88283-41-4	Pyrifenox	1				0																0		1			1					0
369	53112-28-0	Pyrimethanil	1				0							1									1					0					0
370	123343-16-8	Pyrithiobac-sodium	1				0							1									1					0					0
371	13593-03-8	Quinalphos	2				0															1	1				1	1					0
372	90717-03-6	Quinmerac	1				0																0		1			1					0
373	2797-51-5	Quinoclamine	1				0																0				1	1					0
374	124495-18-7	Quinoxyfen	1				0																0	1				1					0
375	82-68-8	Quintozene	1				0							1									1					0					0
376	119738-06-6	Quizalofop-p-tefuryl	1				0													1	1		1					0					0
377	10453-86-8	Resmethrin	2				0					1										1	1				1	1					0
378	83-79-4	Rotenone	1				0																0				1	1					0
379	105024-66-6	Silafluofen	1				0													1	1		1					0					0
380	175217-20-6	Silthiofam	1				0																0			1		1					0
381	122-34-9	Simazine	1				0									1	1					1	1					0					0
382	130561-48-7	Sintofen	1				0																0			1		1					0
383	87392-12-9	S-Metolachlor	1				0							1									1					0					0

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0				**28**	**51**	**40**		**3**	**6**	**12**	**11**	**81**	**38**	**113**	**5**	**53**	**53**	**4**	**4**	**21**	**21**	**98**		**23**	**39**	**45**	**112**		**1**	**32**		**13**	
384	13464-38-5	Sodium arsenate	1				**0**	1															**1**					**0**					**0**
385	128-04-1	Sodium dimethyl dithio carbamate	1				**0**					1											**1**					**0**					**0**
386	62-74-8	Sodium fluoroacetate (1080)	1	1		1	**1**																**0**					**0**					**0**
387	168316-95-8	Spinosad	1				**0**																**0**				1	**1**					**0**
388	148477-71-8	Spirodiclofen	1				**0**					1											**1**					**0**					**0**
389	57-24-9	Strychnine	1		1		**1**																**0**					**0**					**0**
390	3689-24-5	Sulfotep	1	1			**1**																**0**					**0**					**0**
391	21564-17-0	TCMTB	2			1	**1**							1									**1**					**0**					**0**
392	107534-96-3	Tebuconazole	2				**0**							1									**1**			1		**1**					**0**
393	119168-77-3	Tebufenpyrad	1				**0**							1									**1**					**0**					**0**
394	96182-53-5	Tebupirimifos	1	1			**1**																**0**					**0**					**0**
395	79538-32-2	Tefluthrin	2		1		**1**																**0**				1	**1**					**0**
396	335104-84-2	Tembotrione	1				**0**							1									**1**					**0**					**0**
397	3383-96-8	Temephos	1				**0**																**0**				1	**1**					**0**
398	149979-41-9	Tepraloxydim	1				**0**									1	1					1	**1**					**0**					**0**
399	13071-79-9	Terbufos	1	1			**1**																**0**					**0**					**0**
400	886-50-0	Terbutryn	1				**0**							1								1	**1**					**0**					**0**
401	2593-15-9	Terrazole; Etridiazole	1				**0**					1				1	1					1	**1**					**0**					**0**
402	22248-79-9	Tetrachlorvinphos	2				**0**					1											**1**				1	**1**					**0**
403	112281-77-3	Tetraconazole	2				**0**					1											**1**			1		**1**					**0**
404	7696-12-0	Tetramethrin	2				**0**							1									**1**				1	**1**					**0**
405	148-79-8	Thiabendazole	1				**0**							1									**1**					**0**					**0**
406	111988-49-9	Thiacloprid	1				**0**					1											**1**					**0**					**0**
407	153719-23-4	Thiamethoxam	1				**0**																**0**				1	**1**					**0**
408	117718-60-2	Thiazopyr	1				**0**							1									**1**					**0**					**0**
409	59669-26-0	Thiodicarb	2				**0**					1											**1**				1	**1**					**0**
410	39196-18-4	Thiofanox	2		1		**1**																**0**				1	**1**					**0**

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0				28	51	40		3	6	12	11	81	38	113	5	53	53	4	4	21	21	98		23	39	45	112		1	32		13	
411	640-15-3	Thiometon	2		1		**1**																**0**				1	**1**					**0**
412	23564-05-8	Thiophanate-methyl	1				**0**					1											**1**					**0**					**0**
413	62-56-6	Thiourea	1				**0**									1	1						**1**					**0**					**0**
414	137-26-8	Thiram	2				**0**															1	**1**					**0**		1	X		**1**
415	731-27-1	Tolylfluanid	2			1	**1**					1											**1**					**0**					**0**
416	210631-68-8	Topramezone	2				**0**							1									**1**			1		**1**					**0**
417	8001-35-2	Toxaphene	3				**0**					1	1			1	1					1	**1**	1				**1**		1		1	**1**
418	87820-88-0	Tralkoxydim	2				**0**							1									**1**		1			**1**					**0**
419	66841-25-6	Tralomethrin	1				**0**																**0**				1	**1**					**0**
420	43121-43-3	Triadimefon	1				**0**							1								1	**1**					**0**					**0**
421	55219-65-3	Triadimenol	1				**0**							1								1	**1**					**0**					**0**
422	2303-17-5	Tri-allate	2				**0**							1									**1**		1			**1**					**0**
423	82097-50-5	Triasulfuron	1				**0**																**0**		1	1		**1**					**0**
424	24017-47-8	Triazophos	1		1		**1**																**0**					**0**					**0**
425	101200-48-0	Tribenuron methyl	1				**0**							1									**1**					**0**					**0**
426	78-48-8	Tribufos	1				**0**							1									**1**					**0**					**0**
427	nocas 8	Tributyltin compounds	1				**0**															1	**1**					**0**					**0**
428	52-68-6	Trichlorfon	2				**0**							1								1	**1**				1	**1**					**0**
429	3380-34-5	Triclosan	1				**0**						1										**1**					**0**					**0**
430	41814-78-2	Tricyclazole	1				**0**																**0**		1	1		**1**					**0**
431	81412-43-3	Tridemorph	1				**0**													1	1		**1**					**0**					**0**
432	58138-08-2	Tridiphane	1				**0**							1									**1**					**0**					**0**
433	1582-09-8	Trifluralin	2				**0**							1		1	1					1	**1**	1				**1**					**0**
434	126535-15-7	Triflusulfuron-methyl	1				**0**							1									**1**					**0**					**0**
435	26644-46-2	Triforine	1				**0**							1									**1**					**0**					**0**
436	131983-72-7	Triticonazole	1				**0**																**0**		1	1		**1**					**0**
437	83657-22-1	Uniconazole	1				**0**							1									**1**					**0**					**0**
438	37248-47-8	Validamycin	1				**0**																**0**				1	**1**					**0**

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				Group 1: Acute Toxicity				Group 2: Long term effects															Group 3: Environmental toxicity					Group 4: Conventions				
	CAS number	**Pesticide**	sum of max=1 in Groups 1-4	WHO Ia	WHO Ib	R26	**max = 1**	EPA carc	IARC carc	EU canc (1,2)	EU GHS (1A, 1B)	EPA prob likel carc	IARC prob carc	EPA poss carc	IARC poss carc	EU canc (3)	EU GHS (2)	EU muta (1,2)	EU GHS muta (1A, 1B)	EU repro (1,2)	EU GHS repro (1A ,1B)	EU EDC (1,2) or C2 & R2 GHS	**max = 1**	very bio acc	very pers water	very pers water sedi	highly toxic bees	**max = 1**	Montr Prot	PIC	See note below the table	POP	**max = 1**
0				**28**	**51**	**40**		**3**	**6**	**12**	**11**	**81**	**38**	**113**	**5**	**53**	**53**	**4**	**4**	**21**	**21**	**98**		**23**	**39**	**45**	**112**		**1**	**32**		**13**	
439	2275-23-2	Vamidothion	1		1		**1**																**0**					**0**					**0**
440	50471-44-8	Vinclozolin	1				**0**							1		1	1			1	1	1	**1**					**0**					**0**
441	81-81-2	Warfarin	2		1		**1**													1	1		**1**					**0**					**0**
442	2655-14-3	XMC	1				**0**																**0**				1	**1**					**0**
443	52315-07-8	zeta-Cypermethrin	3		1		**1**							1								1	**1**				1	**1**					**0**
444	12122-67-7	Zineb	1				**0**															1	**1**					**0**					**0**
445	137-30-4	Ziram	2			1	**1**							1								1	**1**					**0**					**0**
446	23783-98-4	Z-Phosphamidon	1	1			**1**																**0**					**0**					**0**

X Annex III of the PIC/Rotterdam Convention refers to certain formulations of those chemical indicated with an "X"

Explanatory notes:

WHO 1a:	Extremely hazardous (Class 1a) according to World Health Organisation
WHO 1b:	Highly hazardous (Class 1b) according to World Health Organisation
R26:	Very toxic by inhalation according to EU
max = 1	This active ingredient meets at least one criteria in this Group
EPA carc	Human carcinogen according to EPA
IARC carc	Human carcinogen according to IARC
EU carc (1,2)	Known to be carcinogenic to humans (category 1) or sufficient evidence to provide a strong presumption that human exposure to a substance may result in the development of cancer (category 2) according to EU
EU GHS (1A, 1B):	Known or presumed human carcinogens (1A or 1B) according to EU GHS Regulation 1272/2008/EC
EPA prob/likel carc	Probable/ Likely carcinogen according to EPA
IARC prob carc	Probable carcinogen according to IARC
EPA poss carc:	Possible carcinogen according to EPA
IARC poss carc:	Possible carcinogen according to IARC
EU carc (3):	Substances which cause concern for humans owing to possible carcinogenic effects (category 3) according to EU
EU GHS (2):	Suspected human carcinogen (Cat. 2) according to EU GHS Regulation 1272/2008/EC
EU muta (1,2):	Substances known to be mutagenic to man (category 1) or substances which should be regarded as if they are mutagenic to man (category 2) according to EU
EU GHS muta (1A, 1B)	Substances known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans. Substances known to induce heritable mutations in the germ cells of humans' (Category 1A or 1B) according to EU Regulation 1272/2008/EC
EU repro (1,2):	Substances known to be mutagenic to man (category 1) or substances which should be regarded as if they are mutagenic to man (category 2) according to EU
EU GHS repro (1A, 1B):	Substances known to impair fertility in humans (category 1) or substances which should be regarded as if they impair fertility in humans and/or substances which should be regarded as if they cause developmental toxicity to humans (category 2) according to EU
EU EDC (1,2) or C2 & R2 GHS:	Endocrine disruptor or potential endocrine disruptor according to EU Category 1 or Category 2 or GHS Carcer 2 AND EU reproductive toxicity
Very bio acc:	Very bioaccumulative according to REACh criteria
Very pers water:	Very persistent/water according to REACh criteria
Very pers water sedi:	Very persistent in water/sediment according to REACh criteria
Highly toxic bees:	Hazard to ecosystem services – Highly toxic for bees according to U.S. EPA as listed by FOOTPRINT data
Montr Prot:	Ozone depleting according to the Montreal Protocol
PIC:	Listed in Annex III of the Rotterdamer Convention
POP:	Listed in Annex III of the Stockholmer Convention