

# **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  
Pesticide Action Network International.

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## About this publication

For decades, the distribution and use of hazardous pesticides is an issue of concern. Since its 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<sup>s</sup> a number of international instruments and guidelines have been adopted<sup>1</sup> 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<sup>2</sup> 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*

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<sup>1</sup> 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>)

<sup>2</sup> 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<sup>3</sup>. 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.”<sup>4</sup>

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, ecotoxicological 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

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<sup>3</sup> This document is available at: [http://www.fao.org/unfao/bodies/coag/coag20/index\\_en.htm](http://www.fao.org/unfao/bodies/coag/coag20/index_en.htm)

<sup>4</sup> The minutes of the panel of experts meeting October 2007 are available at: <http://www.fao.org/ag/agpp/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.

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

<sup>5</sup> 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.

|  |   |
|--|---|
|  | <p><b>'Suspected human reproductive toxicant (Category 2) AND 'Suspected human carcinogens' (Category 2) according to EU Regulation 1272/2008/EC.</b></p> <p><b>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</b></p> |
| <b>High environmental concern</b>  | <b>Stockholm Convention: Pesticides listed in Annex A &amp; B</b>   |
|  | <b>Ozone depleting according to the Montreal Protocol</b>   |
|  | <b>'Very bioaccumulative'</b> according to REACH criteria as listed by FOOTPRINT (BCF >5000) or   |
|  | <b>'Very persistent'</b> according to REACH criteria as listed by FOOTPRINT (half-life > 60 d in marine- or freshwater or half-life > 180 d in marine or freshwater sediment) or  |
|  | <b>Hazard to ecosystem services – 'Highly toxic for bees'</b> according to U.S. EPA as listed by FOOTPRINT data<br>(bee toxicity: LD50, µg/bee < 2)   |
| <b>Known to cause a high incidence of severe or irreversible adverse effects</b> | <b>Rotterdam Convention: Pesticides listed in Annex III</b>   |
|  | <b>Incidences to be documented</b>  |

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

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## **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<sub>50</sub> 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<sub>50</sub> values of the active ingredients in the formulation or mixture. However, so-called 'inert' ingredients<sup>6</sup> 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)

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<sup>6</sup> "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 Regulation 1272/2008/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 Regulation 1272/2008/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 Regulation 1272/2008/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 30<sup>th</sup> amendment<sup>7</sup> 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 30<sup>th</sup> Adaptation to Technical Progress of Directive 67/548/EEC. European Chemical Bureau (ECB) <http://ecb.jrc.ec.europa.eu/classification-labelling>

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<sup>7</sup> Final proposal of the Technical Committee on Classification and Labeling of Dangerous Substances for the 30<sup>th</sup> 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<sup>8</sup> 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.<sup>9</sup> 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

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<sup>8</sup> 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)

<sup>9</sup> 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.<sup>10</sup> 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<sup>11</sup>. US EPA defines a pesticide as highly toxic to bees if the LD 50 is lower than 2 microgram/bee ( $\mu\text{g}/\text{bee}$ ). 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](http://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.

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<sup>10</sup> 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

<sup>11</sup> 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](http://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)

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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  
Azoxytobin  
Bendiocarb  
Benfluralin  
Benfuracarb  
Benomyl  
Bensulide  
Bentazone  
Benthiavalcarb-isopropyl  
Beta-cyfluthrin; Cyfluthrin  
beta-HCH; beta-BCH  
Bifenthrin  
Binapacryl  
Bioresmethrin  
Bis (chloroethyl) ether  
Blastidicin-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  
Chlozolate  
Cholecalciferol; Vitamin D3  
Cinidon-ethyl  
Clodinafop-propargyl  
Clofencet  
Clofentezine  
Cloprialid  
Clothianidin  
Coconut diethanolamide  
Coumaphos  
Coumatetralyl  
Creosote  
Cumyluron  
Cyanamide  
Cyanazine  
Cyhalothrin  
Cyhalothrin, gamma  
Cyhexatin  
Cypermethrin  
Cypermethrin, alpha  
Cyproconazole  
Cyromazine  
Daminozide  
DDT  
Deltamethrin  
Demeton-S-methyl  
Diafenthuron  
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  
Ethalfuralin  
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  
Haloxypop-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



Quinalphos  
Quinmerac  
Quinoclamine  
Quinoxifen  
Quintozene  
Quizalofop-p-tefuryl  
Resmethrin  
Rotenone  
Silafiuofen  
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  
Tolyfluanid  
Topramezone  
Toxaphene  
Tralkoxydim  
Tralomethrin  
Triadimefon  
Triadimenol  
Tri-allate  
Triasulfuron  
Triazophos  
Tribenuron methyl  
Tribufos  
Tributyltin compounds  
Trichlorfon  
Triclosan  
Tricyclazole  
Tridemorph  
Tridiphane  
Trifluralin  
Triflurosulfuron-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 1<sup>st</sup> version of the list dated January 16<sup>th</sup>, 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  
Blastidicin-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  
Silaflofen  
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:<br>Acute Toxicity |                |          |           | Group 2:<br>Long term effects |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |                             |         |              | Group 4:<br>Conventions |                      |                   |         |            |     |                          |     |         |  |
|------------|-------------|---|--------|----------------------------|----------------|----------|-----------|-------------------------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|-----------------------------|---------|--------------|-------------------------|----------------------|-------------------|---------|------------|-----|--------------------------|-----|---------|--|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4                    | WHO Ia | WHO Ib                     | R26<br>max = 1 | EPA carc | IARC carc | EU carc (1,2)                 | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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 | PLC | 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       | 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   | 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       |  |

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

|            |             |                             |        | Group 1:<br>Acute Toxicity |                |          |           | Group 2:<br>Long term effects |                 |                     |                |               |                |             |            |               |                      |                | Group 3:<br>Environmental toxicity |  |              |                 |                      | Group 4:<br>Conventions      |            |     |                          |                |    |   |    |
|------------|-------------|-----------------------------|--------|----------------------------|----------------|----------|-----------|-------------------------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|----------------|------------------------------------|--|--------------|-----------------|----------------------|------------------------------|------------|-----|--------------------------|----------------|----|---|----|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4  | WHO Ia | WHO Ib                     | R26<br>max = 1 | EPA carc | IARC carc | EU carc (1,2)                 | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi | highly toxic bees<br>max = 1 | Montr Prot | PLC | See note below the table | POP<br>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 |    |

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

|            |             |   | Group 1:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |  |              |                 | Group 4:<br>Conventions |                   |         |            |     |                          |     |         |    |  |
|------------|-------------|---|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|--|--------------|-----------------|-------------------------|-------------------|---------|------------|-----|--------------------------|-----|---------|----|--|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4              | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi    | highly toxic bees | max = 1 | Montr Prot | PLC | 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   | X                        |     |         | 1  |  |
| 79         | 55285-14-8  | Carbosulfan                             | 2                          |        |                | 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:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |                             |         |              | Group 4:<br>Conventions |                      |                   |         |            |     |                          |     |         |  |
|------------|-------------|-----------------------------|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|-----------------------------|---------|--------------|-------------------------|----------------------|-------------------|---------|------------|-----|--------------------------|-----|---------|--|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4  | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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 | PLC | 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                        | 1   |         |  |
| 82         | 6164-98-3   | Chlordimeform               | 2                          |        |                | 0        |                               |               |                 | 1                   |                |               |                | 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   |         |  |

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

|     |             |                      |                            | Group 1:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |  |              |                 | Group 4:<br>Conventions |                   |         |            |     |                          |                |   |    |
|-----|-------------|----------------------|----------------------------|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|--|--------------|-----------------|-------------------------|-------------------|---------|------------|-----|--------------------------|----------------|---|----|
|     | CAS number  | Pesticide            | sum of max=1 in Groups 1-4 | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi    | highly toxic bees | max = 1 | Montr Prot | PLC | See note below the table | POP<br>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              | 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                        | 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 |    |

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

|     |             |                     |                            | Group 1:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |  |              |                 | Group 4:<br>Conventions |                   |         |            |     |                          |     |         |    |  |
|-----|-------------|---------------------|----------------------------|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|--|--------------|-----------------|-------------------------|-------------------|---------|------------|-----|--------------------------|-----|---------|----|--|
|     | CAS number  | Pesticide           | sum of max=1 in Groups 1-4 | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi    | highly toxic bees | max = 1 | Montr Prot | PLC | 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 |  |
| 137 | 34205-21-5  | Dimefuron           | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              | 1               |                         |                   |         | 1          |     |                          |     |         | 0  |  |
| 138 | 87674-68-8  | Dimethamid          | 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  |  |

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

|            |             |                                       |        | Group 1:<br>Acute Toxicity |                |          |           | Group 2:<br>Long term effects |                 |                     |                |               |                |             |            |               |                      |                | Group 3:<br>Environmental toxicity |  |              |                 |                      | Group 4:<br>Conventions |         |            |     |                          |                |   |    |
|------------|-------------|---------------------------------------|--------|----------------------------|----------------|----------|-----------|-------------------------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|----------------|------------------------------------|--|--------------|-----------------|----------------------|-------------------------|---------|------------|-----|--------------------------|----------------|---|----|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4            | WHO Ia | WHO Ib                     | R26<br>max = 1 | EPA carc | IARC carc | EU carc (1,2)                 | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi | highly toxic bees       | max = 1 | Montr Prot | PLC | See note below the table | POP<br>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 |
| 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  | Ethalfuralin                          | 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                                      |              |                 |                      |                         | 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 |    |

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

|     |             |  |                            | Group 1:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |  |              |                 | Group 4:<br>Conventions |                   |         |            |     |                          |     |         |    |   |
|-----|-------------|--|----------------------------|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|--|--------------|-----------------|-------------------------|-------------------|---------|------------|-----|--------------------------|-----|---------|----|---|
|     | CAS number  | Pesticide                                | sum of max=1 in Groups 1-4 | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi    | highly toxic bees | max = 1 | Montr Prot | PLC | 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 |   |
| 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       | 1          |     |                          |     |         |    | 0 |
| 206 | 239110-15-7 | Fluopicolide                             | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              | 1               | 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       | 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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|            |             |  |        | Group 1:<br>Acute Toxicity |                |          |           | Group 2:<br>Long term effects |                 |                     |                |               |                |             |            |               |                      |                | Group 3:<br>Environmental toxicity |  |              |                 |                      | Group 4:<br>Conventions |         |            |     |                          |     |         |    |  |
|------------|-------------|--|--------|----------------------------|----------------|----------|-----------|-------------------------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|----------------|------------------------------------|--|--------------|-----------------|----------------------|-------------------------|---------|------------|-----|--------------------------|-----|---------|----|--|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4                     | WHO Ia | WHO Ib                     | R26<br>max = 1 | EPA carc | IARC carc | EU carc (1,2)                 | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi | highly toxic bees       | max = 1 | Montr Prot | PLC | 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 |  |
| 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  | Haloxypop-methyl<br>(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   | 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   | 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  |  |

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

|            |             |                            |        | Group 1:<br>Acute Toxicity |                |          |           | Group 2:<br>Long term effects |                 |                     |                |               |                |             |            |               |                      |                | Group 3:<br>Environmental toxicity |  |              |                 |                      | Group 4:<br>Conventions      |            |     |                          |                |    |   |    |
|------------|-------------|----------------------------|--------|----------------------------|----------------|----------|-----------|-------------------------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|----------------|------------------------------------|--|--------------|-----------------|----------------------|------------------------------|------------|-----|--------------------------|----------------|----|---|----|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4 | WHO Ia | WHO Ib                     | R26<br>max = 1 | EPA carc | IARC carc | EU carc (1,2)                 | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi | highly toxic bees<br>max = 1 | Montr Prot | PLC | See note below the table | POP<br>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 |
| 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            |                 |                      |                              | 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 |    |

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

|     |             |                       |                            | Group 1:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |  |              |                 | Group 4:<br>Conventions |                              |            |     |                          |                |    |   |    |
|-----|-------------|-----------------------|----------------------------|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|--|--------------|-----------------|-------------------------|------------------------------|------------|-----|--------------------------|----------------|----|---|----|
|     | CAS number  | Pesticide             | sum of max=1 in Groups 1-4 | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi    | highly toxic bees<br>max = 1 | Montr Prot | PLC | See note below the table | POP<br>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 |
| 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 |    |
| 280 | 74-83-9     | Methyl bromide        | 2                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                              | 0          | 1   |                          |                |    | 1 |    |
| 281 | 556-61-6    | Methyl isothiocyanate | 1                          |                            |        |                | 0        |                               |               |                 | 1                   |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 282 | 75-09-2     | Methylene chloride    | 1                          |                            |        |                | 0        |                               |               |                 | 1                   | 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          |     |                          |                |    | 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 |    |



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

|     |             |                               |                            | Group 1:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |  |              |                 | Group 4:<br>Conventions |                   |         |            |     |                          |     |         |    |  |
|-----|-------------|-------------------------------|----------------------------|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|--|--------------|-----------------|-------------------------|-------------------|---------|------------|-----|--------------------------|-----|---------|----|--|
|     | CAS number  | Pesticide                     | sum of max=1 in Groups 1-4 | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi    | highly toxic bees | max = 1 | Montr Prot | PLC | 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 |  |
| 329 | 52645-53-1  | Permethrin                    | 2                          |                            |        |                |          |                               |               |                 | 1                   |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                   | 1       | 1          |     |                          |     |         | 0  |  |
| 330 | 26002-80-2  | Phenothrin                    | 1                          |                            |        |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 331 | 2597-03-7   | Phenthoate                    | 2                          |                            |        |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         | 1                 | 1       |            |     |                          |     |         | 0  |  |
| 332 | 298-02-2    | Phorate                       | 2                          | 1                          |        |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         | 1                 | 1       |            |     |                          |     |         | 0  |  |
| 333 | 732-11-6    | Phosmet                       | 2                          |                            |        |                |          |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         | 1                 | 1       |            |     |                          |     |         | 0  |  |
| 334 | 13171-21-6  | Phosphamidon                  | 4                          | 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                          |                            |        |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 | 1                       | 1                 |         | 1          |     |                          |     |         | 0  |  |
| 337 | 51-03-6     | Piperonyl butoxid             | 1                          |                            |        |                |          |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 338 | 23103-98-2  | Pirimicarb                    | 2                          |                            |        |                |          |                               |               |                 | 1                   |                |               |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         | 1                 | 1       |            |     |                          |     |         | 0  |  |
| 339 | 29232-93-7  | Pirimiphos-methyl             | 1                          |                            |        |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         |                   | 1       | 1          |     |                          |     |         | 0  |  |
| 340 | 32289-58-0  | Polyhexamethylene biguanidine | 1                          |                            |        |                |          |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 341 | 299-45-6    | Potasan                       | 1                          |                            |        | 1              | 1        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 342 | 23031-36-9  | Prallethrin                   | 1                          |                            |        |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         | 1                 | 1       |            |     |                          |     |         | 0  |  |
| 343 | 67747-09-5  | Prochloraz                    | 2                          |                            |        |                |          |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 | 1                       | 1                 |         | 1          |     |                          |     |         | 0  |  |
| 344 | 32809-16-8  | Procymidone                   | 1                          |                            |        |                |          |                               |               |                 | 1                   |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 345 | 29091-21-2  | Prodiamine                    | 1                          |                            |        |                |          |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 346 | 41198-08-7  | Profenofos                    | 1                          |                            |        |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         | 1                 | 1       |            |     |                          |     |         | 0  |  |
| 347 | 139001-49-3 | Profoxydim                    | 1                          |                            |        |                |          |                               |               |                 |                     |                |               |                | 1           | 1          |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 348 | 7287-19-6   | Prometryn                     | 1                          |                            |        |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 349 | 1918-16-7   | Propachlor                    | 1                          |                            |        |                |          |                               |               |                 | 1                   |                |               |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 350 | 709-98-8    | Propanil                      | 1                          |                            |        |                |          |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 351 | 2312-35-8   | Propargite                    | 2                          |                            |        |                |          |                               |               |                 | 1                   |                |               |                | 1           | 1          |               |                      |                                    |                       | 1                                      | 1            |                 | 1                       |                   |         | 1          |     |                          |     |         | 0  |  |
| 352 | 139-40-2    | Propazine                     | 2                          |                            |        |                |          |                               |               |                 |                     |                |               |                | 1           | 1          |               |                      |                                    |                       | 1                                      |              | 1               |                         |                   |         | 1          |     |                          |     |         | 0  |  |
| 353 | 31218-83-4  | Propetamphos                  | 1                          |                            | 1      |                |          |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         |                   |         | 0          |     |                          |     |         | 0  |  |
| 354 | 60207-90-1  | Propiconazole                 | 2                          |                            |        |                |          |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         | 1                 | 1       |            |     |                          |     |         | 0  |  |
| 355 | 114-26-1    | Propoxur                      | 2                          |                            |        |                |          |                               |               |                 | 1                   |                |               |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         | 1                 | 1       |            |     |                          |     |         | 0  |  |

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|            |             |                            |        | Group 1:<br>Acute Toxicity |                |          |           | Group 2:<br>Long term effects |                 |                     |                |               |                |             |            |               |                      |                | Group 3:<br>Environmental toxicity |  |              |                 |                      | Group 4:<br>Conventions      |            |     |                          |                |    |   |    |
|------------|-------------|----------------------------|--------|----------------------------|----------------|----------|-----------|-------------------------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|----------------|------------------------------------|--|--------------|-----------------|----------------------|------------------------------|------------|-----|--------------------------|----------------|----|---|----|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4 | WHO Ia | WHO Ib                     | R26<br>max = 1 | EPA carc | IARC carc | EU carc (1,2)                 | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi | highly toxic bees<br>max = 1 | Montr Prot | PLC | See note below the table | POP<br>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 |
| 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  | Pyraclufos                 | 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 | Pyriothiobac-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 | Quinoxifen                 | 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        |           |                               |                 |                     |                |               |                | 1           | 1          |               |                      |                |                                    | 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 |    |

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

|     |             |                                  |                            | Group 1:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |  |              |                 | Group 4:<br>Conventions |                              |            |     |                          |                |    |    |  |
|-----|-------------|----------------------------------|----------------------------|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|--|--------------|-----------------|-------------------------|------------------------------|------------|-----|--------------------------|----------------|----|----|--|
|     | CAS number  | Pesticide                        | sum of max=1 in Groups 1-4 | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi    | highly toxic bees<br>max = 1 | Montr Prot | PLC | See note below the table | POP<br>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 |  |
| 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                                      |              |                 |                         | 1                            | 1          |     |                          |                |    | 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  |  |

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

|            |             |                            | Group 1:<br>Acute Toxicity |        |                |          | Group 2:<br>Long term effects |               |                 |                     |                |               |                |             |            |               |                      | Group 3:<br>Environmental toxicity |                       |  |              |                 | Group 4:<br>Conventions |                              |            |     |                          |                |    |   |    |
|------------|-------------|----------------------------|----------------------------|--------|----------------|----------|-------------------------------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|------------------------------------|-----------------------|--|--------------|-----------------|-------------------------|------------------------------|------------|-----|--------------------------|----------------|----|---|----|
| CAS number | Pesticide   | sum of max=1 in Groups 1-4 | WHO Ia                     | WHO Ib | R26<br>max = 1 | EPA carc | IARC carc                     | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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<br>max = 1 | very bio acc | very pers water | very pers water sedi    | highly toxic bees<br>max = 1 | Montr Prot | PLC | See note below the table | POP<br>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 |
| 411        | 640-15-3    | 2                          |                            | 1      |                | 1        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         | 1                            | 1          |     |                          |                |    | 0 |    |
| 412        | 23564-05-8  | 1                          |                            |        |                | 0        |                               |               |                 | 1                   |                |               |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 413        | 62-56-6     | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                | 1           | 1          |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 414        | 137-26-8    | 2                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                              | 0          | 1   | X                        |                |    | 1 |    |
| 415        | 731-27-1    | 2                          |                            |        | 1              | 1        |                               |               |                 | 1                   |                |               |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 416        | 210631-68-8 | 2                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 | 1                       |                              | 1          |     |                          |                |    | 0 |    |
| 417        | 8001-35-2   | 3                          |                            |        |                | 0        |                               |               |                 | 1                   | 1              |               |                | 1           | 1          |               |                      |                                    |                       | 1                                      | 1            | 1               |                         |                              | 1          | 1   | 1                        | 1              | 1  | 1 |    |
| 418        | 87820-88-0  | 2                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              | 1               |                         |                              | 1          |     |                          |                |    | 0 |    |
| 419        | 66841-25-6  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         | 1                            | 1          |     |                          |                |    | 0 |    |
| 420        | 43121-43-3  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 421        | 55219-65-3  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 422        | 2303-17-5   | 2                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              | 1               |                         |                              | 1          |     |                          |                |    | 0 |    |
| 423        | 82097-50-5  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              | 1               | 1                       |                              | 1          |     |                          |                |    | 0 |    |
| 424        | 24017-47-8  | 1                          |                            | 1      |                | 1        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 425        | 101200-48-0 | 1                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 426        | 78-48-8     | 1                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 427        | nocas 8     | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 428        | 52-68-6     | 2                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      | 1            |                 |                         |                              | 1          |     |                          |                |    | 0 |    |
| 429        | 3380-34-5   | 1                          |                            |        |                | 0        |                               |               |                 |                     | 1              |               |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 430        | 41814-78-2  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              | 1               | 1                       |                              | 1          |     |                          |                |    | 0 |    |
| 431        | 81412-43-3  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      | 1                                  | 1                     | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 432        | 58138-08-2  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 433        | 1582-09-8   | 2                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                | 1           | 1          |               |                      |                                    |                       | 1                                      | 1            | 1               |                         |                              | 1          |     |                          |                |    | 0 |    |
| 434        | 126535-15-7 | 1                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 435        | 26644-46-2  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 436        | 131983-72-7 | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              | 1               | 1                       |                              | 1          |     |                          |                |    | 0 |    |
| 437        | 83657-22-1  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                | 1             |                |             |            |               |                      |                                    |                       | 1                                      |              |                 |                         |                              | 0          |     |                          |                |    | 0 |    |
| 438        | 37248-47-8  | 1                          |                            |        |                | 0        |                               |               |                 |                     |                |               |                |             |            |               |                      |                                    |                       | 0                                      |              |                 |                         | 1                            | 1          |     |                          |                |    | 0 |    |

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

|            |            | Group 1:<br>Acute Toxicity |        |        |                | Group 2:<br>Long term effects |           |               |                 |                     |                |               |                |             |            |               |                      |                | Group 3:<br>Environmental toxicity |                             |         |              |                 | Group 4:<br>Conventions |                   |         |            |     |                          |     |         |  |
|------------|------------|----------------------------|--------|--------|----------------|-------------------------------|-----------|---------------|-----------------|---------------------|----------------|---------------|----------------|-------------|------------|---------------|----------------------|----------------|------------------------------------|-----------------------------|---------|--------------|-----------------|-------------------------|-------------------|---------|------------|-----|--------------------------|-----|---------|--|
| CAS number | Pesticide  | sum of max=1 in Groups 1-4 | WHO Ia | WHO Ib | R26<br>max = 1 | EPA carc                      | IARC carc | EU carc (1,2) | EU GHS (1A, 1B) | EPA prob likel carc | IARC prob carc | EPA poss carc | IARC poss carc | EU carc (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 | PLC | 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  | Vamidotion                 | 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   |