

# Fairtrade Hazardous Materials List changes

## Explanatory note

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The revised version of the Hazardous Materials List (HML) succeeds the previous version of Prohibited Materials List (PML) 2011 which was last amended on 15/05/2014. This revision is as part of the regular monitoring and improvement process of the standards.

The revised HML was approved by the Standards Committee in July 2016, published in October 2016 and applicable as of 1<sup>st</sup> January 2018.

**The purpose of this document is to provide a more detailed view, examples and understanding on the changes that took place after the transition to HML from PML. The key changes that were published in the Main Change Document are listed below with additional clarification on some of the points.**

### Key changes:

- **Change in title of the document:** The Prohibited Materials List has been renamed as Hazardous Materials List, as some materials in the list are not completely prohibited. Some are allowed to be used under certain conditions, while some are only flagged to be hazardous and recommended to be used under extreme caution.
- **Change of name of Amber List to Yellow List:** Amber List has been renamed as Yellow List, for better identification of the different lists and also to remove the confusion arising due to introduction of the Orange List.
- **Introduction of Orange List:** A new list, called Orange List, has been introduced for listing materials whose use is perceived as difficult for immediate discontinuation, and identified as difficult to replace in the near future while giving time to producers to reduce their use and find alternatives. The progress of producers to find alternatives to Orange list pesticides will be monitored and based on the learnings a decision will be taken on the materials in the Orange List in the next revision.
- **More criteria of hazards for listing materials in HML:** the range of hazard criteria considered by the new HML is wider than the range of criteria taken in account in the original PML. The Hazardous Materials List includes materials that are identified as Highly Hazardous as defined in the Code of Conduct on Pesticide Management adopted by FAO and WHO in 2013 plus active ingredients considered Highly Hazardous Pesticides by PAN.

### Code of Conduct on Pesticide Management (FAO 2013) definitions:

**Pesticide** means any substance, or mixture of substances of chemical or biological ingredients intended for repelling, destroying or controlling any pest, or regulating plant growth. This includes insecticides, herbicides, fungicides, molluscicides and plant growth regulators and altogether they are more than

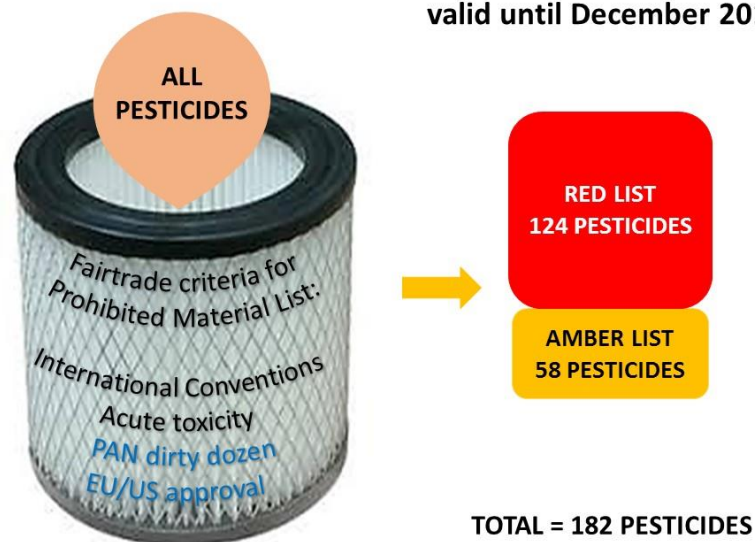
1000 chemicals. Among these substances, Fairtrade has applied some criteria as a “filter” to choose the most relevant pesticides and to compile the Prohibited Material List (PML) which was applicable until end of 2017 (see figure below).

**Highly Hazardous Pesticides** means pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or environment according to internationally accepted classification systems such as WHO or GHS or their listing in relevant binding international agreements or conventions. In addition, pesticides that appear to cause severe or irreversible harm to health or the environment under conditions of use in a country may be considered to be and treated as highly hazardous.

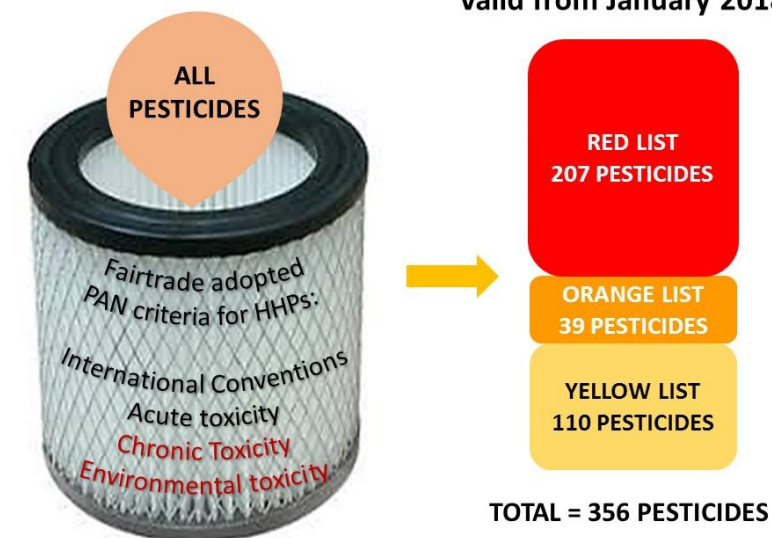
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The number of criteria selected by Fairtrade has been expanded to compile the Hazardous Material List and it reflects the 2015 PAN International HHPs list, which includes 296 pesticides. In addition, Fairtrade has added to the HML some pesticides which are no longer listed by PAN. Since 2013 the update of the PAN HHP List removed several pesticides now classified as obsolete by FAO and WHO. However, it could be that limited uses still happen illegally, especially if obsolete stockpiles remain. These pesticides considered obsolete are marked in blue in this document. As a consequence of Fairtrade increasing the number of hazard criteria used, the number of pesticides listed in the HML has almost doubled, rising from 182 to 356 pesticides. The figure below shows how criteria have changed and by consequence how the number of pesticides listed has also changed.

**Criteria applied for the Fairtrade Prohibited Material List  
valid until December 2017**



**Criteria applied for the Fairtrade Hazardous Material List  
valid from January 2018**



**Change of criteria used by Fairtrade to develop its pesticide list:**

<b>Prohibited Material List 2011</b>	<b>Hazardous Material List 2016</b>	<b>Reason for keeping, withdrawal or addition</b>
POP: The Stockholm Convention on Persistent Organic Pollutants	POP: The Stockholm Convention on Persistent Organic Pollutants	INTERNATIONAL CONVENTION criteria
PIC: The Rotterdam Convention on the Prior Information Consent Procedure	PIC: The Rotterdam Convention on the Prior Information Consent Procedure	INTERNATIONAL CONVENTION criteria
PAN 12: Pesticide Action Network's "dirty dozen" list (currently 18 pesticides)		Almost all the "dirty dozen" pesticides are now included in the International Conventions and therefore covered by this criterion
WHO 1a and 1b: World Health Organization Acute toxicity classification Ia and Ib	WHO 1a and 1b: World Health Organization Acute toxicity classification Ia and Ib	ACUTE TOXICITY Criteria
EU: Banned or severely restricted in the European Union according to PAN List of Lists		The reference to the EU list has been removed because the legislation to refer to is the one in force in the Country where the pesticide is used.
US: Banned or severely restricted pesticide EPA according to PAN List of Lists		The reference to the US list has been removed because the legislation to refer to is the one in force in the Country where the pesticide is used.
	Fatal if inhaled H330	Additional ACUTE TOXICITY Criterion introduced by PAN International in its HHPs list.
	Carcinogenic to humans according to IARC, US EPA, GHS	CHRONIC TOXICITY criteria
	Probable/likely carcinogenic to humans according to IARC, US EPA	CHRONIC TOXICITY criteria
	Substances known to induce heritable mutations (mutagenic) GHS	CHRONIC TOXICITY criteria
	'Known or Presumed human reproductive toxicant' (reprotoxic) GHS	CHRONIC TOXICITY criteria

	Potential endocrine disruptor according to EU Category	Additional CHRONIC TOXICITY Criterion introduced by PAN International in its HHPs list.
	Very persistent in water	ENVIRONMENTAL CONCERN criteria
	Very bioaccumulative	ENVIRONMENTAL CONCERN criteria
	Very toxic to aquatic organisms	ENVIRONMENTAL CONCERN criteria
	Highly toxic for bees	Additional ENVIRONMENTAL TOXICITY Criterion introduced by PAN International in its HHPs list

! All the pesticides that cause ACUTE TOXICITY or are listed under the INTERNATIONAL CONVENTIONS are incorporated in the HML Red or Orange lists.

This is because acute toxicity induces short term effects and prohibiting the use of acutely toxic pesticides is the best way to protect the workers' health.

In the HML Red or Orange lists are also included pesticides that meet certain chronic or environmental toxicity criteria prioritized by Fairtrade.

Pesticides that are probably carcinogenic or present some environmental toxicity, but not acute toxicity and are not listed under the international conventions are included in the HML Yellow list.

The table below shows for which HML list each criterion qualifies.

In the Red and the Orange list some criteria seem to overlap. Indeed, during the development of the HML list, Fairtrade recognised that some pesticides would have been difficult to phase-out or to replace in the near future. Therefore, they have been included in the new Orange list to be upgraded to the Red list in the future.

The only criterion specific for the Orange list is being one of the Greenpeace bee toxic 7 or representing high concern to civil society.

INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns		
POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic Endocrine disruptor (EDC)	Very bioaccumulative Very persistent in water and sediments Toxic to aquatic organisms	Highly toxic for bees (Greenpeace 7)	Highly toxic for bees
							At least 2 of the 3 criteria above met		
							One 2 of the 3 criteria above met		

## New pesticides added in the Red list – 71 pesticides

The criteria fatal if inhaled (H330), chronic toxicity or environmental concerns were not included in the PML, but are in the HML so when a pesticide meets these criteria is incorporated in the Red list of HML. There are 71 pesticides now qualifying for the HML Red list. Here below some examples:

Name of active ingredient of pesticide				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Toxic for bees * = Greenpeace 7
Chloropicrin		R	76-06-2				H330					
Fluazipop-butyl		R	69806-50-4							Reprotoxic		
Maneb		R	12427-38-2						Probably carcinogenic	Endocrine disruptor (EDC)		
Terbufos		R	13071-79-9								Very bioaccumulative Very toxic to aquatic organisms	

The blank box means that the pesticide was not included in the PML

The red box means that the pesticides is included in the HML Red list

These criteria were not included in the PML, but the pesticides meeting these criteria are now included in the HML

For the whole list of pesticides newly added in the HML Red list, please see the ANNEX 1.

## Pesticides that were in the PML Red list and have been kept in the HML Red list – 110 pesticides

The new HML criteria are wider than the old PML criteria, so these 110 pesticides that were already listed in the PML are automatically included in the HML. Here below some examples:

Name of active ingredient of pesticide				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Toxic for bees * = Greenpeace 7
Aldicarb	R	R	116-06-3		PIC		WHO Ia H330					Highly toxic for bees
Beta-HCH; beta-BCH	R	R	319-85-7	POP						Endocrine disruptor (EDC)		
Demeton-S-methyl	R	R	919-86-8				WHO Ib					Highly toxic for bees
	R	R					WHO Ia					

The red box means that the pesticide was already included in the PML Red list

These criteria were already included in the PML, so the pesticides meeting these criteria were already listed in the PML and are also incorporated in the HML

The red box means that the pesticides is included in the HML Red list

For the whole list of pesticides that were in the PML's Red list and are in the HML Red list, please see the ANNEX 1.



## Pesticides that were in the PML Amber list and have been moved to the HML red list – 24 pesticides

The new HML criteria are wider than the old PML criteria, so these 24 pesticides that were already listed in the PML Amber list are automatically included in the HML, but they now qualify for the Red list. Most of them are obsolete pesticides. Here below some examples:

Name of active ingredient of pesticide				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Toxic for bees * = Greenpeace 7
Alachlor	Y	R	1572-60-8		PIC					Endocrine disruptor (EDC)		
Dicofol	Y	R	115-32-2							Endocrine disruptor (EDC)	Very bio accumulative	
Fentin hydroxide	Y	R	76-87-9				H330		Probably carcinogenic	Endocrine disruptor (EDC)		

The yellow box means that the pesticide was already included in the PML Amber list

The red box means that the pesticide is included in the HML Red list

The pesticides were included in the Amber list of PML because restricted or banned in the EU or the US, without considering other criteria. Now the criteria are explicit qualifying them for the HML Red list.

For the whole list of pesticides that were in the PML's Amber list and are in the HML Red list, please see the ANNEX 1.

## New pesticides added in the Orange list – 35 pesticides

These 35 active ingredients were not listed in the PML. They meet the added criteria that were not considered in the former list. The new HML criteria are wider than the old PML criteria and by consequence most of these pesticides meeting the added criteria now qualify for the Red list. However, Fairtrade recognises that it is very difficult to stop their use immediately, or to replace them in the near future, so the new Orange List has been introduced to gather these pesticides, with the aim to give time to producers to reduce their use and find alternatives.

The Orange list also includes pesticides that would qualify for the Yellow List but represent high concern to civil society (e.g. glyphosate) and/or features in the *Greenpeace bee toxic 7 pesticides* (Chlorpyrifos, Clothianidin, Cypermethrin, Deltamethrin, Fipronil, Imidacloprid and Thiametoxam).

Here below some examples of Orange list pesticides:

Name of active ingredient of pesticide	PML	HML	CAS number	INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
				POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Toxic for bees * = Greenpeace 7
Bifenthrin		O	82657-04-3							Endocrine disruptor (EDC)		Highly toxic for bees
Clothianidin		O	210880-92-5									*Highly toxic for bees
Glyphosate		O	1071-83-6						Probable carcinogenic			
Lambda-cyhalothrin		O	91465-08-6				H330			Endocrine disruptor (EDC)		Highly toxic for bees

The blank box means that the pesticide was not included in the PML

The orange box means that the pesticide is included in the HML Orange list

These criteria were not included in the PML, but the pesticides meeting these criteria are now included in the HML. Most of them would qualify for the HML Red list, but Fairtrade has placed them in the Orange list as immediate phase-out is difficult.

For the whole list of pesticides newly added in the Orange list, please see the ANNEX 1.

### Pesticides that were in the PML red list and have been moved to the HML Orange list – 3 pesticides

These 3 pesticides were already listed in the Red list of PML, but being difficult to discontinue them in the short term, or to replace in the immediate future, they have been added to the new Orange list to give time to producers to reduce their use and find alternatives.

Name of active ingredient of pesticide				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Toxic for bees * = Greenpeace 7
Beta-cyfluthrin;Cyfluthrin	R	O	68359-37-5				WHO Ia H330					Highly toxic for bees
Dichlorvos;DDVP	R	O	62-73-7				WHO Ia H330					Highly toxic for bees
Oxamyl	R	O	23135-22-0				WHO Ia H330					Highly toxic for bees

The red box means that the pesticide was already included in the PML red list

These criteria were already included in the PML, so the pesticides meeting these criteria were already listed in the PML and are qualifying now for the HML Red list, but Fairtrade has placed them in the Orange list as immediate phase-out is difficult.

The orange box means that the pesticide is included in the HML Orange list

For the whole list of pesticides newly added in the Orange list, please see the ANNEX 1.

## Pesticides that were in the PML Amber list and are now in the HML Orange list – 4 pesticides

These 4 pesticides were already listed in the Amber list of PML because they were banned or severely restricted in the EU or in the US. This criterion is no longer used in the HML, but these active ingredients meet some criteria which qualifies them for the Red or Orange HML list. Being difficult to discontinue them in the short term, or to replace in the immediate future, they have been added to the new Orange list to give time to producers to reduce their use and find alternatives.

Name of active ingredient of pesticide	PML	HML	CAS number	INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
				POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Highly toxic for bees
Amitraz	A	O	33089-61-1									
Atrazine	A	O	1912-24-9							Endocrine disruptor (EDC)		
Carbaryl	A	O	63-25-2						Probable carcinogenic	Endocrine disruptor (EDC)		Highly toxic for bees
Carbosulfan	A	O	55285-14-8				H330					Highly toxic for bees

The yellow box means that the pesticide was already included in the PML Amber list

The orange box means that the pesticide is included in the HML Orange list

The pesticides were included in the Amber list of PML because restricted or banned in the EU or the US, without considering other criteria. Now the criteria are explicit qualifying them for the HML Red list, but Fairtrade has placed in the Orange list as immediate phase-out is difficult.

## New pesticides added in the Yellow list – 88 pesticides

These 88 pesticides were not listed in the PML but they meet some criteria that were not considered in the former list. Pesticides probably carcinogenic, causing environmental concerns or hazard to ecosystem services were not included in the PML, but are in the HML. Pesticides probably carcinogenic, or that

meet only one of the environmental concerns criteria or highly toxic for bees are incorporated in the yellow list of HML. (The pesticides belonging to the *Greenpeace bee toxic 7* are included in the Orange list). Here below some examples:

Name of active ingredient of pesticide	PML	HML	CAS number	INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
				POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Highly toxic for bees
Butachlor		Y	23184-66-9						Probable carcinogenic			
Diazinon		Y	333-41-5									Highly toxic for bees
Imazalil		Y	35554-44-0						Probable carcinogenic			
Spinosad		Y	168316-95-8									Highly toxic for bees

The blank box means that the pesticide was not included in the PML

The yellow box means that the pesticide is included in the HML Yellow list

These criteria were not included in the PML, but the pesticides meeting these criteria are now included in the HML.

For the whole list of pesticides newly added in the Yellow list, please see the ANNEX 1.

Pesticides that were in the PML Amber list and are now in the HML Yellow list – 20 pesticides

These 20 pesticides were already listed in the Amber list of PML because they were banned or severely restricted in the EU or in the US. This criterion is no longer used in the HML, but these active ingredients meet some criteria which qualifies them for the Yellow HML list. Here below some examples:

Name of active ingredient of pesticide	PML	HML	CAS number	INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
				POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Highly toxic for bees
Fenthion	A	Y	55-38-9									Highly toxic for bees
Malathion	A	Y	121-75-5						Probable carcinogenic			Highly toxic for bees
Permethrin	A	Y	52645-53-1						Probable carcinogenic			Highly toxic for bees
Thiodicarb	A	Y	59669-26-0						Probable carcinogenic			Highly toxic for bees

The yellow box means that the pesticide was already included in the PML Amber list

The yellow box means that the pesticide is included in the HML Yellow list

The pesticides included in the Amber list of PML were integrated because restricted or banned in the EU or the US, without considering other criteria. Now the criteria are explicit, qualifying them for the HML Yellow list.

For the whole list of pesticides that were in the PML's Amber list and are in the HML Yellow list, please see the ANNEX 1.

### Pesticides that were in the PML red list and have been moved to the HML Yellow list – 1 pesticide

Name of active ingredient of pesticide	PML	HML	CAS number	INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns
				POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org Toxic for bees
<i>Amoxicillin</i>	R	Y	26787-78-0								

### Evolution of the PAN List of Highly Hazardous Pesticides

The number of active ingredients on the PAN HHP List changes over time. The reasons for changes are mainly changes in classifications made by organisations referred to in this list such as WHO, EU, EPA or IARC. In 2010, for example, more pesticides were classified as toxic to bees and as persistent. In 2013, numerous substances, which are either obsolete or are not agricultural pesticides, were deleted. Even though 12 pesticides were added to the 2015 version due to new data or classification changes the June 2015 version was significantly shorter than versions before 2014. The main reasons were: (a) the deletion of those pesticides classified as “possible carcinogens”, which is no longer a criterion included in the PAN HHP list, and (b) the required combination for two of the three Persistence, Bioaccumulative and Toxic characteristics (i.e. P&B; B&T or P&T).

### Pesticides whose classification has changed and therefore are no longer included in the HML.

The pesticides are periodically re-evaluated and their classification is updated on the basis of scientific studies. It can happen that the characteristic of these pesticides change, so they don't meet anymore the HHPs criteria. In this case, the pesticides are eliminated from the PAN HHPs list. In addition, pesticides classified as obsolete by FAO and WHO are no longer included in the PAN HHPs list

### Pesticides included in the AMBER list of PML and no longer listed in the HML

bromoxynil butyrate
chlozolinate
di (phenylmercury) dodecenylsuccinate (PMDS)
ethyl hexylene glycol
ferbam

maleic hydrazide and its salts, other than choline, potassium and sodium salts ; choline, potassium and sodium salts; maleic hydrazide containing more than 1 mg/kg of free hydrazine expressed on the basis of the acid equivalent
monolinuron
nonylphenol ethoxylates
pyriminil (vacor)
triazamate

### Pesticides included in the Red list of PML and no longer listed in the HML

cyfluthrin
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Here below the changes between the 2015 PAN HHP list, to which the Fairtrade HML refers to, and the updated version of 2016.

PAN International aims to update the HHP list regularly, to reflect any changes triggered by new evaluations. No changes regarding the set of PAN criteria for identifying HHPs have been made since the update in 2015, to which the HML refers. Here below the changes of the 2016 version.\*<sup>1</sup>

One pesticide has been deleted:

**Imazethapyr** had been removed from the list. New data shows that it is not classified as ‘highly toxic for bees’. Its bee toxicity (LD50, µg/bee) is >24.6 (oral; 48 h), >100 (contact; 48 h).

Two pesticides have been added:

**Pendimethalin** – for being persistent and bioaccumulative and

**Triflumizole** – as probable reproductive toxin (GHS Repr. 1B).

Since several salts of the boric acid are now classified as probable reproductive toxin (GHS Repr. 1B) they are now grouped together as one entry ‘**Borax, Borate salts**’.

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<sup>1</sup> This information will be regularly updated





				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7 org
Diquat dibromide		R	85-00-7				✓					
Diquat dichloride		R	4032-26-2				✓					
E-Phosphamidon		R	297-99-4				✓					
Epichlorohydrin		R	106-89-8					✓	✓	✓		
Ethylene thiourea		R	96-45-7						✓	✓		
Fenarimol		R	60168-88-9							✓		
Fenbutatin-oxide		R	13356-08-6				✓				✓	
Fenchlorazole-ethyl		R	103112-35-2					✓				
Fluazifop-butyl		R	69806-50-4							✓		
Fluazolate		R	174514-07-9								✓	
Flumetralin		R	62924-70-3								✓	
Flumioxazin		R	103361-09-7							✓		
Formaldehyde		R	50-00-0					✓	✓			
Halfenprox		R	111872-58-3								✓	
Hexaflumuron		R	86479-06-3								✓	
Ioxynil		R	1689-83-4							✓		
Isopyrasam		R	881685-58-1						✓		✓	
Linuron		R	330-55-2							✓		
Magnesium phosphide		R	12057-74-8				✓					
Maneb		R	12427-38-2						✓	✓		
Metam-sodium		R	137-42-8						✓	✓		
Methoxychlor		R	72-43-5							✓		
Methyl bromide		R	74-83-9			✓						



				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7
Tributyltin compounds		R	no cas							✓		
Tridemorph		R	81412-43-3							✓		
Trifluralin		R	1582-09-8							✓	✓	
<i>Triforine</i>		R	26644-46-2									
Vinclozolin		R	50471-44-8							✓		
Ziram		R	137-30-4				✓					
Z-Phosphamidon		R	23783-98-4				✓					

### New pesticides added in the Yellow (Y) list – 88 pesticides

[illegible]

[illegible]

[illegible]





[illegible]

### New pesticides added in the Orange (O) list – 35 pesticides

[illegible]

				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7
Chlorpyrifos-methyl		O	5598-13-0									✓
Clothianidin		O	210880-92-5									✓*
Cypermethrin		O	65731-84-2									✓*
Cypermethrin,alpha		O	67375-30-8									✓
Cypermethrin,beta		O	65731-84-2									✓
Deltamethrin		O	52918-63-5							✓		✓*
Dimethoate		O	60-51-5									✓
Epoxiconazole		O	133855-98-8						✓	✓		
Etofenprox; Ethofenprox		O	80844-07-1								✓	✓
Fenitrothion		O	122-14-5							✓		✓
Fenpropathrin		O	39515-41-8				✓					✓
Fipronil		O	120068-37-3									✓*
Flufenoxuron		O	101463-69-8								✓	
Flusilazole		O	85509-19-9							✓		
Glufosinate- ammonium		O	77182-82-2							✓		
Glyphosate		O	1071-83-6						✓			
Imidacloprid		O	138261-41-3									✓*
Lambda-cyhalothrin		O	91465-08-6				✓			✓		✓
Lufenuron		O	103055-07-8								✓	
Mancozeb		O	8018 01 7						✓	✓		
Phosphine		O	7803-51-2				✓					
Pirimicarb		O	23103-98-2						✓		✓	

[illegible]

Pesticides that were in the PML Red (R) list and have been kept in the HML Red (R) list – 110 pesticides

Name of active ingredient of pesticide	PML	HML	CAS number	INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
				POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7
<i>2,4,5-T</i>	R	R	93-76-5		✓					✓		
Acrolein	R	R	107-02-8				✓					
Aldicarb	R	R	116-06-3		✓		✓					✓
<i>Aldrin</i>	R	R	309-00-2	✓	✓				✓	✓		✓
<i>Allyl alcohol</i>	R	R	107-18-6									
alpha-BHC;alpha-HCH	R	R	319-84-6	✓								
Alpha-chlorohydrin	R	R	96-24-2				✓					
<i>Asbestos</i>	R	R	1332-21-4				✓					
Azinphos-ethyl	R	R	2642-71-9				✓					✓
Azinphos-methyl	R	R	86-50-0		✓		✓					✓
beta-HCH; beta-BCH	R	R	319-85-7	✓						✓		
<i>Binapacryl</i>	R	R	485-31-4		✓					✓		
Blasticidin-S	R	R	2079-00-7				✓					
Brodifacoum	R	R	56073-10-0				✓			✓		
Bromadiolone	R	R	28772-56-7				✓			✓		
Bromethalin	R	R	63333-35-7				✓				✓	
Butocarboxim	R	R	34681-10-2									✓
Butoxycarboxim	R	R	34681-23-7				✓					
<i>Calcium arsenate</i>	R	R	7778-44-1				✓					
<i>Calcium cyanide</i>	R	R	592-01-8				✓					
Captafol	R	R	2425 06 1		✓		✓	✓	✓			
Chlordane	R	R	57-74-9	✓	✓				✓	✓	✓	

				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7
<i>Chlordecone</i>	R	R	143-50-0	✓							✓	✓
<i>Chlordimeform</i>	R	R	6164-98-3		✓				✓	✓		
Chlorethoxyphos	R	R	54593-83-8				✓					✓
Chlorfenvinphos	R	R	470-90-6				✓					✓
Chlormephos	R	R	24934-91-6				✓					
<i>Chlorobenzilate</i>	R	R	510-15-6		✓							
Chlorophacinone	R	R	3691-35-8				✓					
Coumaphos	R	R	56-72-4				✓			✓		
Coumatetralyl	R	R	5836-29-3				✓					
<i>DBCP</i>	R	R	96-12-8					✓		✓		
DDT	R	R	50-29-3	✓	✓				✓	✓	✓	
Demeton-S-methyl	R	R	919-86-8				✓					✓
Dicrotophos	R	R	141-66-2				✓					✓
<i>Dieldrin</i>	R	R	60-57-1	✓	✓				✓	✓	✓	
Difenacoum	R	R	56073-07-5				✓				✓	
Difethialone	R	R	104653-34-1				✓			✓		
<i>Dinoseb and its salts</i>	R	R	88-85-7		✓					✓		
Dinoterb	R	R	1420-07-1				✓			✓		
Diphacinone	R	R	82-66-6				✓					
Disulfoton	R	R	298-04-4				✓					
DNOC and its salts	R	R	534-52-1		✓		✓					
Edifenphos	R	R	17109-49-8				✓					
Endosulfan	R	R	115-29-7	✓	✓		✓					
<i>Endrin</i>	R	R	72-20-8	✓						✓		

				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7
EPN	R	R	2104-64-5				✓					✓
Ethiofencarb	R	R	29973-13-5				✓					
Ethoprophos; Ethoprop	R	R	13194-48-4				✓		✓			
Ethylene dichloride, EDC	R	R	107-06-2		✓			✓	✓			
Ethylene oxide	R	R	75-21-8		✓			✓		✓		
Ethylenedibromide;1,2-dibromoethane, EDB	R	R	106-93-4		✓			✓	✓	✓		
Famphur	R	R	52-85-7				✓					
Fenamiphos	R	R	22224-92-6				✓					✓
Flocoumafen	R	R	90035-08-8				✓			✓		
Flucythrinate	R	R	70124-77-5				✓					✓
Fluoroacetamide	R	R	640-19-7		✓		✓					
Formetanate	R	R	22259-30-9				✓					✓
Furathiocarb	R	R	65907-30-4				✓					
<i>Heptachlor</i>	R	R	76-44-8	✓	✓				✓	✓	✓	
Heptenophos	R	R	23560-59-0				✓					✓
Hexachlorobenzene (HCB)	R	R	118-74-1	✓	✓		✓	✓	✓	✓	✓	
Hexachlorocyclohexane HCH	R	R	608-73-1		✓				✓	✓		
Isoxathion	R	R	18854-01-8				✓					✓
<i>Lead arsenate</i>	R	R	7784-40-9				✓	✓				
Lindane	R	R	58-89-9	✓	✓					✓		✓
Mecarbam	R	R	2595-54-2				✓					

				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7
Mercury and its compounds	R	R	7439-97-6		✓		✓					
Methamidophos	R	R	10265-92-6		✓		✓					✓
Methidathion	R	R	950-37-8				✓					✓
Methiocarb	R	R	2032-65-7				✓					✓
Methomyl	R	R	16752-77-5				✓					✓
Mevinphos	R	R	7786-34-7				✓					✓
Mirex	R	R	2385-85-5	✓						✓	✓	
Monocrotophos	R	R	6923-22-4		✓		✓					✓
Nicotine	R	R	54-11-5				✓					
Omethoate	R	R	1113-02-6				✓			✓		✓
Oxydemeton-methyl	R	R	301-12-2				✓					✓
Paraquat dichloride	R	R	1910-42-5				✓					
Parathion	R	R	56-38-2		✓		✓					✓
Parathion-methyl	R	R	298-00-0		SHPF		✓					
Paris Green (copper acetoarsenite)	R	R	12002-03-8					✓				
PCP pentachlorophenol	R	R	87-86-5	✓	✓		✓		✓	✓		
Pentachlorobenzene	R	R	608-93-5	✓								
Phenylmercury acetate	R	R	62-38-4							✓		
Phorate	R	R	298-02-2				✓					✓
Phosphamidon	R	R	13171-21-6		SHPF		✓					✓

[illegible]



				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7
<i>Thallium sulfate</i>	R	R	7446-18-6				✓					
Thiofanox	R	R	39196-18-4				✓					✓
Thiometon	R	R	640-15-3				✓					✓
<i>Toxaphene; Campheclor</i>	R	R	8001-35-2	✓	✓				✓	✓	✓	
Triazophos	R	R	24017-47-8				✓					
<i>Tris(2,3 - dibromopropyl) phosphate</i>	R	R	126-72-7		✓				✓			
Vamidothion	R	R	2275-23-2				✓					✓
Warfarin	R	R	81-81-2				✓			✓		
zeta-Cypermethrin	R	R	52315-07-8				✓					✓
Zinc phosphide	R	R	1314-84-7				✓					

**Pesticides that were in the PML Red (R) list and have been moved to the HML Orange (O) list – 3 pesticides**

				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PM L	HM L	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 1
Beta-cyfluthrin; Cyfluthrin	R	O	68359-37-5				✓					✓
Dichlorvos; DDVP	R	O	62-73-7				✓					✓
Oxamyl	R	O	23135-22-0				✓					✓

**Pesticides that were in the PML Red (R) list and have been moved to the HML Yellow (Y) list – 1 pesticide**

[illegible]

Pesticides that were in the PML Amber (A) list and are now in the HML Yellow (Y) list – 20 pesticides

Name of active ingredient of pesticide	PML	HML	CAS number	INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
				POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox. to aqua org	Toxic for bees * = Greenpeace 7
Acephate	A	Y	30560-19-1									✓
<i>Butylate</i>	A	Y	2008-41-5									
Chlorfenapyr	A	Y	122453-73-0									✓
Cyhalothrin (not lambda)	A	Y	68085-85-8									✓
Cyhalothrin, gamma	A	Y	76703-62-3									✓
Daminozide	A	Y	1596-84-5						✓			
<i>Dimethenamid</i>	A	Y	87674-68-8									
Fenthion	A	Y	55-38-9									✓
Fenvalerate	A	Y	51630-58-1									✓
Haloxypop-methyl; haloxypop	A	Y	69806-40-2						✓			
Malathion	A	Y	121-75-5						✓			✓
<i>Monuron</i>	A	Y	150-68-5									
Permethrin	A	Y	52645-53-1						✓			✓
<i>Phosalone</i>	A	Y	2310-17-0									
<i>Propham</i>	A	Y	122-42-9									
Pyrazophos	A	Y	13457-18-6									✓
<i>Quintozene</i>	A	Y	82-68-8									
<i>Simazine</i>	A	Y	122-34-9							✓		
<i>Technazene</i>	A	Y	117-18-0									
Thiodicarb	A	Y	59669-26-0						✓			✓

### Pesticides that were in the PML Amber (A) list and are now in the HML Red (R) list – 24 pesticides

[illegible]

				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Toxic for bees * = Greenpeace 7
<i>Silvex</i>	A	R	93-72-1									
<i>Terpene polychlorinates</i>	A	R	8001-35-2								✓	
Trichlorfon	A	R	52-68-6							✓		✓
<i>Vinyl chloride</i>	A	R	75-01-4					✓				
Zineb	A	R	12122-67-7							✓		

Pesticides that were in the PML Amber (A) list and are now in the HML Orange (O) list – 4 pesticides

				INTERNATIONAL CONVENTIONS			Acute toxicity	Carcinogenic	Probably Carcinogenic	Chronic toxicity	Environmental concerns	Hazard to ecosystem services
Name of active ingredient of pesticide	PML	HML	CAS number	POP	PIC	Montreal	WHO Ia WHO Ib H330	EPA IARC EU-GHS	EPA IARC	Mutagenic Reprotoxic EDC	Very bioacc Very pers Tox to aqua org	Toxic for bees * = Greenpeace 7
<i>Amitraz</i>	A	O	33089-61-1									
Atrazine	A	O	1912-24-9							✓		
Carbaryl	A	O	63-25-2						✓	✓		✓
Carbosulfan	A	O	55285-14-8				✓					✓