Pesticides Policy

v1.0

For Stakeholder Consultation

Preferred by Nature Certification

Title	**Pesticides Policy**
Document code	PBN-07
Scope	Global
Status of document	DRAFT
Version	1.0
Date	8 September 2025
Official language(s)	English
Approval body	Preferred by Nature
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Preferred by Nature has adopted an Open Source Policy to share what we develop whenever this may contribute to advancing sustainability.

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Introduction

Global concern is growing over the risks that many pesticides pose to human health, wildlife, and the environment. Persistent pesticides can bioaccumulate in ecosystems, certain insecticides contribute to pollinator declines and biodiversity loss, and mishandling of pesticides can cause acute poisonings in farming communities. International agreements reflect a broad commitment to address these dangers – for example, the Stockholm Convention aims to eliminate persistent organic pollutants, the Rotterdam Convention restricts trade in particularly hazardous pesticides, and the Montreal Protocol has phased out ozone-depleting pesticides such as methyl bromide. Global biodiversity frameworks have also set targets to significantly reduce pesticide impacts worldwide.

In line with these developments, Preferred by Nature's policy aligns with international conventions and sustainable development goals, demonstrating leadership in reducing reliance on highly hazardous pesticides. As an organisation dedicated to protecting people, nature, and climate, Preferred by Nature (PBN) supports a precautionary approach to pesticide management that also recognises practical realities.

This policy is grounded in scientific consensus on pesticide hazards and supports global sustainability goals such as good health, clean water, responsible production, and life on land. It employs a **tiered approach**: the most dangerous substances are strictly prohibited, while certain other high-risk pesticides may be allowed under **Exceptional Use** conditions when no viable alternatives exist. **General-use** pesticides are allowed following best practices to avoid negative impacts on people and nature, and in line with the general principle of continuous reduction.

The overarching aim is to reduce pesticide hazards in PBN-certified operations and support the transition toward safer, more sustainable pest management.

This policy shall be used in conjunction with other normative documents in the PBNC programme. See **Box 1**.

Box 1.

Normative Documents for Preferred by Nature Certification

PBN-01. Sustainability Framework
Establishes the principles, criteria, and indicators that land-use managers must follow to demonstrate responsible, sustainable practices, as well as social requirements for supply chain entities.

PBN-02. System Standard
Sets out generic quality system requirements applicable to all Preferred by Nature certified operations.

PBN-03. Due Diligence Standard
Defines requirements for supplier collaboration, supply chain information, risk assessment, and mitigation for due diligence and includes a EUDR specific annex.

PBN-04. Seal Use Standard
Sets requirements and conditions for using the PBN Seal.

PBN-05. Chain of Custody Standard
Specifies requirements for chain of custody models and traceability systems used to manage claims and track products throughout the supply chain.

PBN-06. Terms and Definitions
Provides definitions and concepts used in the Preferred by Nature Certification programme.

PBN-07. Pesticides Policy
Defines PBN's policy on the use of pesticides.

PBN-08. GMO Policy
Defines PBN's policy on the use of Genetically Modified Organisms (GMOs).

Scope

This policy applies to all Preferred by Nature Certification, Certificate Holders worldwide, across all sectors and commodities covered by the programme. It covers the handling, and use of pesticides, including plant protection products and other biocides, in certified operations.

This version supersedes all previous PBN requirements or guidance on pesticides. It replaces and updates earlier "Prohibited Pesticides" lists and related clauses in the Sustainability Framework.

Version history

V0.1 Draft | Current version for consultation use only

Purpose and principles

The purpose of this policy is to minimise and control the use of hazardous pesticides in PBN-certified operations, protecting human health and the environment while aligning with international best practices and conventions. It operationalises PBN's commitment to the precautionary approach in pesticide use and promotes integrated pest management as the preferred strategy.

This policy establishes a tiered classification of pesticides and sets out requirements for Certificate Holders to eliminate the most dangerous substances (Prohibited Pesticides) and to manage any permitted pesticide use responsibly through risk mitigation and continuous reduction.

PBN recognises international conventions (Stockholm, Rotterdam, Montreal) and scientific criteria (WHO Hazard Classes, GHS classifications) as the basis for determining pesticide hazards. It strives to exceed legal minimums, setting a higher benchmark for sustainability in pest management, in line with global initiatives to phase out Highly Hazardous Pesticides.

The policy balances rigour with pragmatism: while advocating for non-pesticide alternatives and the eventual phase-out of Highly Hazardous Pesticides (HHPs), it provides a controlled mechanism for the exceptional use of certain pesticides where no feasible alternatives exist. In all cases, the safety of people and the environment is paramount, and Certificate Holders are responsible for demonstrating conformance with this policy.

Definitions

For the purposes of this policy, the following definitions apply:

Pesticide

Any substance or mixture of substances intended to prevent, destroy, repel, or mitigate any pest. This includes herbicides, insecticides, fungicides, rodenticides, acaricides, and other agrochemicals used to control pests in agriculture, forestry, or commodity production. It also covers plant growth regulators, defoliants, desiccants, and any substance applied to crops pre- or post-harvest for protection. Reference: FAO and WHO (2016). International Code of Conduct on Pesticide Management: Guidelines on Highly Hazardous Pesticides. FAO, Rome. Available at https://www.fao.org/3/i5566e/i5566e.pdf

Prohibited pesticides

Active ingredients that must not be used in any PBN-certified operation. These correspond to PBN's Annex A, Prohibited List and meet one or more of the following criteria:

- Stockholm Convention (Persistent Organic Pollutants)
  - Listed in Annex A (Elimination) or Annex B (Restriction) of the Stockholm Convention. *Reference: Stockholm Convention – All POPs listed.*
- Rotterdam Convention (Prior Informed Consent (PIC)-listed pesticides)

- Only PIC-listed pesticides that are globally banned or obsolete (i.e., not eligible for exceptional use under any international standard). *Reference: Rotterdam Convention – Annex III Pesticides (relevant banned formulations)*.

- Montreal Protocol (Ozone-depleting substances)
  - Listed as controlled ozone-depleting substances in Annexes A, B, C, or E of the Protocol. *Reference: Montreal Protocol – Controlled Substances*.

- Globally banned due to severe and universally recognised toxicity
  - Active ingredients explicitly banned or classified as obsolete by FAO, UNEP, or WHO and for which no legitimate agricultural or forestry use remains. *Reference: FAO International Code of Conduct on Pesticide Management; UNEP Pesticides and Waste Program; WHO Recommended Classification of Pesticides by Hazard*.

Annex A of this policy contains the current list of Prohibited Pesticide active ingredients. This list will be reviewed and updated regularly .

Exceptional Use Pesticides

Pesticide active ingredients not on the Prohibited List but considered hazardous and therefore only allowed under specific exceptional conditions with PBN oversight and following additional requirements set by PBN.

A pesticide is placed on the Exceptional Use list if any of the following apply:

1. PIC-listed: In Rotterdam Annex III, but not globally banned/obsolete (i.e., not Annex A in this Policy).
2. WHO HHP: WHO Class Ia or Ib (and selected high-risk Class II where justified).
3. Severe hazard (GHS/CLP): Listed by major regulations (GHS[1]/EU CLP[2]) as known or presumed to:
   - Cause cancer (Category 1A or 1B),
   - Harm reproduction (Category 1A or 1B),
   - Cause genetic mutations (Category 1A or 1B), or
   - Cause serious organ damage from repeated exposure (STOT RE Category 1).
4. Pollinator risk: Demonstrated high bee toxicity/systemic exposure with regulatory concern. Based on EU EFSA/ECHA conclusions or national risk assessments; US EPA pollinator risk assessments; harmonised/supplier GHS/CLP bee hazard notes; product label bee warnings/restrictions.
5. Aquatic risk & persistence: Aquatic Acute 1 and Chronic 1 (or equivalent) with plausible water exposure.
6. Groundwater concern: Major-jurisdiction non-approval/restriction due to leaching or detections.
7. High-risk use pattern: Inherent hazard plus exposure-prone application (e.g., aerial/ULV area-wide).

[1] Globally Harmonized System (GHS) of Classification and Labelling of Chemicals (by the UN)
[2] EU's legal implementation of GHS: Classification, Labelling and Packaging Regulation (EC) No 1272/2008

8. Formulation-specific hazard: Listed Severely Hazardous Pesticide Formulation (SHPF) under PIC (e.g., Ultra Low Volume (ULV) or high-strength EC/dust formulations).

Annex B of this policy lists the Exceptional Use Pesticides. Their use is permitted only if all policy requirements are met, including development of an Exceptional Pesticide Use Plan (EPUP) and implementation of risk mitigation measures.

Exceptional Pesticides Use Plan (EPUP)

A documented plan prepared by a Certificate Holder before using any Exceptional Use Pesticide. It must justify the necessity of use and demonstrate how risks will be minimised.

General Use Pesticides

All other pesticide active ingredients not classified as Prohibited or Exceptional Use. These are considered lower-risk and may be used by Certificate Holders, provided all legal requirements, general precautions, and PBN Sustainability Framework criteria are followed. The use of these pesticides must still consider the principles of minimising pesticide use and be carried out responsibly as part of Integrated Pest Management (IPM).

Integrated Pest Management (IPM)

An approach to pest control that emphasises prevention and non-pesticide methods, using pesticides only as a last resort. Components include cultural, mechanical, and biological controls, supported by the judicious use of pesticides based on monitoring and threshold levels. IPM is the foundation of pest management for all Certificate Holders under this policy.

Pesticide categories and related policy requirements

All PBNC Certificate Holders shall comply with the following requirements governing pesticide use:

Prohibited Pesticides

No use of prohibited pesticides:

Certificate Holders shall not use any pesticide active ingredient listed on PBN's Prohibited List (Annex A) in any aspect of their certified operations. This includes use as a formulated product, tank-mix ingredient, seed treatment, or any other delivery method. The prohibition applies equally to direct use by the Certificate Holder (CH) and any use by subcontractors on the CH's land or operations.

Avoidance and phase-out:

If a Certificate Holder has historically used a now-prohibited chemical or retains stock, they must safely dispose of remaining quantities through an approved hazardous waste programme and cease application immediately. CHs are expected to proactively seek alternatives prior to a chemical's inclusion on the Prohibited List, anticipating potential international bans.

Emergency exemption procedure:

In the event of a government-declared public health or agricultural emergency mandating use of a Prohibited Pesticide (e.g., locust control or disease vector spraying), the Certificate Holder shall notify PBN in writing before the application, or immediately after if prior notice is not possible. Such cases will be evaluated individually. The CH must provide evidence of the government order and also conform with any additional directions from PBN to minimise impact. Use under this procedure is the only circumstance where a Prohibited Pesticide might not trigger immediate certification suspension.

Sanctions for non-compliance:

Any use of a Prohibited Pesticide outside the emergency exemption procedure is a serious violation and will result in a Major Non-Conformity. The CH must take immediate corrective action, including ceasing use, safely disposing of the pesticide, and mitigating any damage. Failure to remedy the issue, or wilful violations, may lead to certification suspension or withdrawal. PBN reserves the right to publicly report egregious violations. Repeated infractions may lead to Preferred by Nature disassociating from the organisation and a status of ineligibility for re-certification.

Exceptional Use Pesticides

Conditional permission:

Certificate Holders may only use pesticides listed as Exceptional Use (Annex B) if all conditions in this section are followed. Unauthorised use will be treated as a non-conformance. Exceptional Use pesticides are discouraged and should only be used when absolutely necessary. CHs must first consider alternative measures and then strictly manage approved use through an Exceptional Pesticide Use Plan (EPUP). See the specific requirements related to Exceptional Use Pesticides in the Sustainability Framework. The auditors will evaluate conformance with these requirements, normally during the first upcoming audit, whenever the organisation has used the Exceptional Use Pesticides.

Integrated Pest Management (IPM) first:

Before resorting to an Exceptional Use pesticide, CHs must demonstrate implementation of appropriate IPM measures, including cultural and biological controls or use of lower-risk pesticides if available. Justification for Exceptional Use pesticides must show these measures were ineffective or infeasible. Pest monitoring data and intervention records should document this. Auditors will verify evidence that less toxic methods were prioritised.

Exceptional Pesticide Use Plan (EPUP):

Prior to first application on a management unit, CHs must develop and maintain an EPUP that includes:

- **Justification**: Pest/disease target, context, and evidence of no viable safer alternatives (e.g., IPM records, expert advice).
- **Description of use**: Details of application (crop/field, method, frequency, timing).
- **Risk assessment**: Identification of risks to human health and the environment, considering toxicity, persistence, and exposure.

- **Mitigation measures**: Actions to reduce risks, including PPE, buffer zones, timing restrictions, engineering controls, signage, spill prevention, and emergency response plans, exceeding label requirements when necessary.
- **Monitoring & recording**: Plans to monitor outcomes (efficacy, phytotoxicity, resistance, non-target effects) and maintain detailed usage records, available for audit. Include internal review processes for repeated use.
- **Review of continued need**: Commitment to at least annual review of pesticide necessity, adjusting or ending use if conditions change.
- **Phase-out plan**: Strategies to seek alternatives and reduce reliance, including trials, expert collaboration, and planned reduction timelines.

EPUP approval:

The EPUP is a mandatory internal document that must be developed by CHs intending to apply Exceptional Use Pesticides. It ensures justification, responsible management, and audit readiness. The EPUP will be reviewed and approved during audits.

EPUP oversight:

PBN oversight is audit-based. Before any Exceptional Use Pesticide is purchased or applied, the Certificate Holder must prepare an Exceptional Pesticide Use Plan (EPUP) and send it to PBN for record and traceability. PBN does not issue prior approvals or derogations; the EPUP is checked in the next certification or surveillance audit, alongside the evidence that the plan was followed in practice. If the EPUP is missing, incomplete, or not followed, the issue is raised as a non-conformity, and the CH is expected to correct it.

Strict adherence:

CHs must have the EPUP and implement all EPUP commitments. Any deviation requires justification and documentation.

Time-bound nature:

CHs using Exceptional Use Pesticides must demonstrate progress toward reduction or elimination, or justify continued use. PBN may set phase-out deadlines communicated through policy updates. Pesticides may move to the Prohibited List once deadlines pass. CHs must stay informed of changes.

General Use Pesticides

Allowed use of general-use pesticides:

Certificate Holders may use pesticides not listed in Annex A or B of this policy (i.e., those neither prohibited nor restricted to exceptional use), provided they adhere to good practices and comply with all relevant requirements of this policy and the PBN Sustainability Framework. All pesticide use must be justified through IPM principles (no routine prophylactic application without demonstrated need) and minimised as far as practicable (e.g., avoiding calendar-based spraying).

Safety and responsible application:

For all pesticides, including for General Use pesticides, Certificate Holders must ensure compliance with basic safety, handling, and application standards as outlined in the Sustainability Framework.

If a General Use Pesticide is applied in a manner that poses undue risk — for example, aerial spraying near communities without adequate safeguards — PBN reserves the right to treat this as a non-conformance regardless of the pesticide's classification, since responsible use is required at all times.

Policy review and updates

PBN is committed to maintaining this Pesticide Policy in alignment with evolving scientific knowledge, international standards, and practical field experience. The following provisions outline how the policy and its annexed lists will be reviewed and updated:

Periodic review

The PBNC Steering Group (SG) of PBN, or a designated Pesticides Working Group, shall review this policy at least every three years. The review will consider feedback from implementation (including audit findings, Certificate Holder input, and stakeholder comments), changes in international conventions (e.g., newly listed POPs or PIC pesticides), advances in pest management technologies, and alignment with other leading sustainability standards. Based on the review, the SG may recommend revisions to the policy text or annexes. Substantial changes will require approval by PBN's Board, while minor amendments or updates to the annexed lists may be approved by the SG under delegated authority.

Updating annexes (Lists)

Annex A (Prohibited Pesticides List) and Annex B (Exceptional Pesticides List) are intended to be dynamic documents. PBN will update these lists as needed in response to changes. For example, if the Rotterdam Convention adds a pesticide to Annex III or the WHO reclassifies a pesticide as Class Ia, PBN will incorporate it into the Prohibited list. Conversely, if certain pesticides become obsolete or are globally banned, PBN may remove them from the Exceptional Use List (either because they are moved to Prohibited or become irrelevant). Any proposal to add or remove pesticides will be supported by scientific rationale to maintain credibility and avoid arbitrariness.

Stakeholder input

PBN values input from stakeholders — including Certificate Holders, experts, NGOs, and community representatives — on pesticide-related matters. During major policy revisions, PBN will provide opportunities for public comment on draft changes, following the PBN standards development and revision procedures. Between formal reviews, stakeholders may submit concerns or suggestions regarding the pesticide lists or policy.

Notification and transition

Whenever PBN updates the lists or policy requirements, all Certificate Holders will be formally notified. A reasonable transition period will be provided to comply with new requirements, depending

on the nature of the change. PBN will clearly communicate the effective date of each change and provide any necessary supporting guidance.

Continuous improvement of policy

PBN will move toward greater protection and sustainability over time. As safer alternatives emerge and Certificate Holders adopt them, PBN expects the Exceptional Use category to shrink, with more pesticides moving into the Prohibited List. The vision is that PBN-certified operations eliminate the use of Highly Hazardous Pesticides, relying instead on a combination of non-pesticide methods and low-risk substances only when necessary — achieving sustainable, regenerative production free from harmful pesticides.

Annex A. PBN Prohibited Pesticides List

This annex contains the official list of active ingredients prohibited in PBN-certified operations. It is based on internationally recognized hazardous pesticide lists and is updated regularly by PBN.

Table 1. Prohibited Pesticides List. Certificate Holders must ensure that these active ingredients — and any formulations containing them — are never **used**, **purchased**, or **stored**.

Pesticide	CAS Number	Basis for prohibition	Typical use
1,2-Dibromoethane (EDB)	106-93-4	Rotterdam Convention – Annex III (PIC), pesticide	Soil/post-harvest fumigant
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	Rotterdam Convention – Annex III (PIC), pesticide (f)	Fumigant; historically mixed with EDB
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	93-76-5	Rotterdam Convention – Annex III (PIC) (Dioxin contaminant)	Herbicide/Defoliant
Aldrin	309-00-2	Stockholm POP, Rotterdam PIC	Soil insecticide
Alpha-HCH (α-Hexachlorocyclohexane)	319-84-6	Stockholm POP	Organochlorine insecticide
Beta-HCH (β-Hexachlorocyclohexane)	319-85-7	Stockholm POP	Organochlorine insecticide
Binapacryl	485-31-4	Rotterdam PIC	Acaricide
Captafol	2425-06-1	Rotterdam PIC	Fungicide
Chlordane	57-74-9	Stockholm POP, Rotterdam PIC	Soil/termite insecticide
Chlordecone (Kepone)	143-50-0	Stockholm POP	Soil insecticide
Chlordimeform	6164-98-3	Rotterdam PIC	Insecticide/Acaricide
Chlorobenzilate	510-15-6	Rotterdam PIC	Acaricide
Chlorpyrifos	2921-88-2	Stockholm Convention – Annex A (Elimination). Listed at COP-12 (May 2025) with time-limited specific exemptions	Organophosphate insecticide (broad-spectrum)
DDT	50-29-3	Stockholm POP (restricted to vector control)	Organochlorine insecticide
Dicofol	115-32-2	Stockholm Convention – Annex A (Elimination). Listed at COP-9 (decision SC-9/11)	Organochlorine acaricide/miticide (foliar)
Dieldrin	60-57-1	Stockholm POP, Rotterdam PIC	Organochlorine insecticide

Pesticide	CAS Number	Basis for prohibition	Typical use
Dinitro-ortho-cresol (DNOC) and its salts (ammonium, potassium, sodium)	534-52-1; 2980-64-5; 5787-96-2; 2312-76-7	Rotterdam Convention – Annex III (PIC), pesticide. Group entry includes these salts	Non-selective herbicide/insecticide (orchards, dormant sprays)
Dinoseb	88-85-7	Rotterdam PIC	Herbicide
Benomyl ≥ 7% + carbofuran ≥ 10% + thiram ≥ 15% : Dustable powder formulation (DP) containing	Benomyl 17804-35-2; Carbofuran 1563-66-2; Thiram 137-26-8	Rotterdam Convention – Annex III (PIC), SHPF (formulation-specific entry “Granox TBC / Spinox T”)	Seed treatment dust (fungicide/insecticide mix)
Endosulfan	115-29-7	Stockholm POP, Rotterdam PIC	Insecticide
Endrin	72-20-8	Stockholm POP	Organochlorine insecticide
Ethylene oxide (ETO)	75-21-8	Rotterdam Convention – Annex III (PIC), pesticide	Fumigant/sterilant for stored products and facilities
Fluoroacetamide	640-19-7	Rotterdam Convention – Annex III (PIC), pesticide	Rodenticide/insecticide (now obsolete due to acute toxicity)
HCH (mixed isomers) (technical HCH)	608-73-1	Rotterdam Convention – Annex III (PIC), pesticide. (Separate listings already exist for α-HCH, β-HCH, lindane; this is the technical mixture.)	Broad-spectrum insecticide (historical)
Heptachlor	76-44-8	Stockholm POP, Rotterdam PIC	Soil/termite insecticide
Hexachlorobenzene (HCB)	118-74-1	Stockholm POP, Rotterdam PIC	Fungicide
Lindane	58-89-9	Stockholm POP, Rotterdam PIC	Organochlorine insecticide
Methoxychlor	72-43-5	Stockholm POP	Organochlorine insecticide
Methyl bromide (Bromomethane)	74-83-9	Montreal Protocol (ODS)	Soil fumigant
Methyl parathion — specified formulations only	298-00-0	Rotterdam Convention – Annex III (PIC), Severely Hazardous Pesticide Formulation (SHPF): EC ≥ 19.5% a.i. and dusts ≥ 1.5% a.i. (formulation-specific)	OP insecticide (high-concentration ECs and dusts)
Mirex	2385-85-5	Stockholm POP	Insecticide (ants)

Pesticide	CAS Number	Basis for prohibition	Typical use
Parathion (Ethyl)	56-38-2	WHO Class Ia (extremely hazardous); listed under Rotterdam PIC	Insecticide (organophosphate)
Parathion-methyl (specified SHPF formulations only)	298-00-0	WHO Class Ia (extremely hazardous); listed under Rotterdam PIC	Insecticide (organophosphate)
Parathion (ethyl)	56-38-2	Rotterdam Convention – Annex III (PIC), pesticide	Organophosphate insecticide
Pentachlorophenol (PCP)	87-86-5	Stockholm POP, Rotterdam PIC	Wood preservative
Phosphamidon — soluble liquid formulations > 1000 g a.i./L (SHPF)	13171-21-6	Rotterdam Convention Annex III, SHPF	Insecticide/acaricide
Toxaphene (Camphechlor)	8001-35-2	Stockholm POP, Rotterdam PIC	Organochlorine insecticide

Stockholm Article 4 | Use of Exemption Pesticides

Article 4 of the Stockholm Convention allows governments (Parties) register time-limited specific exemptions for certain POPs listed in Annex A or B.

PBN accepts the use of such Exemption Pesticides where a Party has a valid, registered Article 4 specific exemption that exactly matches the intended use. PBN will not issue prior derogations or approvals. These uses are assessed like any other pesticide use during audits.

Current pesticide-relevant Article 4 entries (Aug 2025):

- Chlorpyrifos — Stockholm Annex A (Elimination) with time-limited specific exemptions (registered Parties only).
- Pentachlorophenol (PCP) and its salts/esters — Stockholm Annex A (Elimination) with a specific exemption for utility poles and cross-arms (registered Parties only).

Annex B. PBN Exceptional Use Pesticides List

This annex identifies pesticide active ingredients that are not on the Prohibited List (Annex A) but are considered highly hazardous. Their use is permitted only under strict Exceptional Use Conditions (EUC) as defined in the EPUP requirements of the Sustainability Framework.

Table 2. Exceptional Use Pesticides

Pesticide	CAS Number	Basis for inclusion in list	Typical uses
Alachlor	15972-60-8	Rotterdam Convention — Annex III (PIC). Listed at COP-5 (2011), Decision RC-5/3	Selective chloroacetanilide **herbicide** (pre-emergence control of annual grasses/broadleaf weeds in maize, soybean, etc.)
Aldicarb	116-06-3	WHO Class Ia (extremely hazardous); Rotterdam Annex III (PIC), Decision RC-5/4	Insecticide/Nematicide (carbamate)
Atrazine	1912-24-9	EU HHP – banned in EU due to groundwater contamination (persistent); studies suggest endocrine disruptor effects	Herbicide (triazine class for broadleaf weed control in crops)
Azinphos-methyl	86-50-0	WHO Class Ib (highly hazardous); listed under Rotterdam Convention (Annex III PIC)	Insecticide (organophosphate, broad-spectrum, e.g., used on orchard crops)
Carbofuran	1563-66-2	WHO Class Ib (highly hazardous); listed under Rotterdam PIC	Systemic insecticide/nematicide (carbamate)
Carbosulfan	55285-14-8	Rotterdam Convention — Annex III (PIC). Listed at COP-12 (May 2025), Decision RC-12/3; DGD UNEP/FAO/RC/COP.12/7/Add.1	**Insecticide** (carbamate) for sucking/chewing pests in cotton, rice, citrus and other crops
Chlorothalonil	1897-45-6	EU HHP – classified as a probable carcinogen; non-approved in EU	Fungicide (broad-spectrum, foliar)
Copper-based fungicides (e.g., copper sulfate, copper hydroxide)	Various	EU HHP – environmental toxicity (toxic to aquatic life); allowed only with restrictions	Fungicide/Bactericide (protectant, used in IPM and organic production)
Dichlorvos (DDVP)	62-73-7	WHO Hazard Class Ib (highly hazardous)	Contact/fumigant insecticide (fogging/aerosols) for stored-product and structural pests

Pesticide	CAS Number	Basis for inclusion in list	Typical uses
Dicrotophos	141-66-2	WHO Hazard Class Ib (highly hazardous)	Systemic OP insecticide for sucking/chewing pests (e.g., cotton, coffee, rice); also supplied as ULV.
Diquat (dibromide)	85-00-7	WHO Class II (moderately hazardous); EU HHP – severe health & ecotoxicity concerns (approval revoked in EU)	Herbicide/Desiccant (non-selective contact herbicide for crop desiccation)
Fenamiphos	22224-92-6	WHO Hazard Class Ib (highly hazardous)	Nematicide for citrus, pineapple, glasshouse vegetables, turf; typically soil-applied
Fenthion — ULV formulations ≥ 640 g a.i./L	55-38-9	Rotterdam Convention — Annex III (PIC), SHPF. Listed at COP-12 (May 2025), Decision RC-12/4 (scope: *ultra-low-volume formulations at or above 640 g a.i./L*)	**Organophosphate insecticide**; **ULV aerial/ground** applications for area-wide vector or bird control (e.g., mosquitoes)
Fipronil	120068-37-3	WHO Class II (moderately hazardous); EU HHP – highly toxic to bees (EU banned for outdoor use to protect pollinators)	Insecticide (phenylpyrazole, broad-spectrum for soil & foliar pests)
Iprodione	36734-19-7	CRC-17 recommendation to list in Annex III (Decision CRC-17/1). Not yet listed by COP; pending global action	**Fungicide** (dicarboximide) for **Botrytis**, **Sclerotinia**, turf diseases; fruit & vegetables
Mancozeb	8018-01-7	EU HHP – considered an endocrine disruptor; non-approved in EU	Fungicide (multi-site protectant)
Methamidophos	10265-92-6	WHO Class Ib (highly hazardous); listed under Rotterdam PIC	Insecticide (organophosphate, systemic)
Methidathion	950-37-8	WHO Hazard Class Ib (highly hazardous)	Insecticide/acaricide on orchard and field crops (citrus, almonds, apples, cotton, etc.)
Methomyl	16752-77-5	WHO Class Ib (highly hazardous); withdrawn from EU market (severely restricted)	Insecticide (oxime carbamate, broad-spectrum and molluscicide)
Monocrotophos	6923-22-4	WHO Class Ib (highly hazardous); listed under Rotterdam PIC	Insecticide (organophosphate, systemic)

Pesticide	CAS Number	Basis for inclusion in list	Typical uses
Neonicotinoid insecticides (e.g., Imidacloprid, Thiamethoxam, Clothianidin)	Various (e.g., Imidacloprid: 138261-41-3)	WHO Class II/III (moderate toxicity); EU HHP – extremely toxic to pollinators (EU banned outdoor uses of imidacloprid, clothianidin, thiamethoxam)	Insecticide (systemic neonicotinoids used for sap-feeding insect pests; seed treatments and foliar)
Oxamyl	23135-22-0	WHO Hazard Class — *see note*. (Used here because user requested; official WHO 2019 lists oxamyl as Class Ia "extremely hazardous")	Soil-applied nematicide/insecticide/acaricide on fruit, vegetables, potatoes, tobacco, ornamentals
Paraquat dichloride	1910-42-5	WHO Class II (moderately hazardous); EU HHP – highly toxic with lethal human incidents	Herbicide (non-selective contact herbicide)
Phorate	298-02-2	WHO Class Ia (extremely hazardous); (severe mammalian toxicity)	Insecticide (organophosphate, systemic soil insecticide)
Terbufos	13071-79-9	WHO Class Ia (extremely hazardous); listed under Rotterdam PIC	Insecticide/Nematicide (organophosphate, soil-applied)

Preferred by Nature is an international non-profit organisation working to support better land management and business practices that benefit people, nature and the climate. We do this through a unique combination of sustainability certification services, projects supporting awareness raising, and capacity building.

For 30 years, we have worked to develop practical solutions to drive positive impacts in production landscapes and supply chains in 100+ countries. We focus on land use, primarily through forest, agriculture and climate impact commodities, and related sectors such as tourism and conservation.

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