

February 2026

What to know when using insecticides containing organophosphates or carbamates (OPCs)

OPCs are insecticides used to control insect pests – they pose significant risk to human health, and many are no longer approved for use. This guide is for persons conducting a business or undertaking (PCBUs) and sets out OPCs' effects on human health and what you can do to minimise the risk.

What does this guidance cover?

This guidance is for PCBUs (the 'you' in this guidance) and covers requirements under the Health and Safety at Work (HSWA) Act 2015 only – this includes regulations made under HSWA such as the Health and Safety at Work (Hazardous Substances) Regulations 2017. Relevant regulations are highlighted in green .

What are OPCs?

Organophosphates and carbamates (OPCs) are insecticides used to control a variety of insect pests on various crops, as well as for pest management in buildings. OPCs are also used for biosecurity purposes.

Insecticides containing OPCs are required to state on the label that the product contains an organophosphate or carbamate.

Always follow label and safety data sheet instructions when using OPCs – a list of OPCs including trade names and active ingredients can be found at the bottom of this guide.

Effects on human health

Because of the toxicity of OPCs, you should only use insecticides containing them if there are no safer alternatives available and as part of an integrated pest management system.

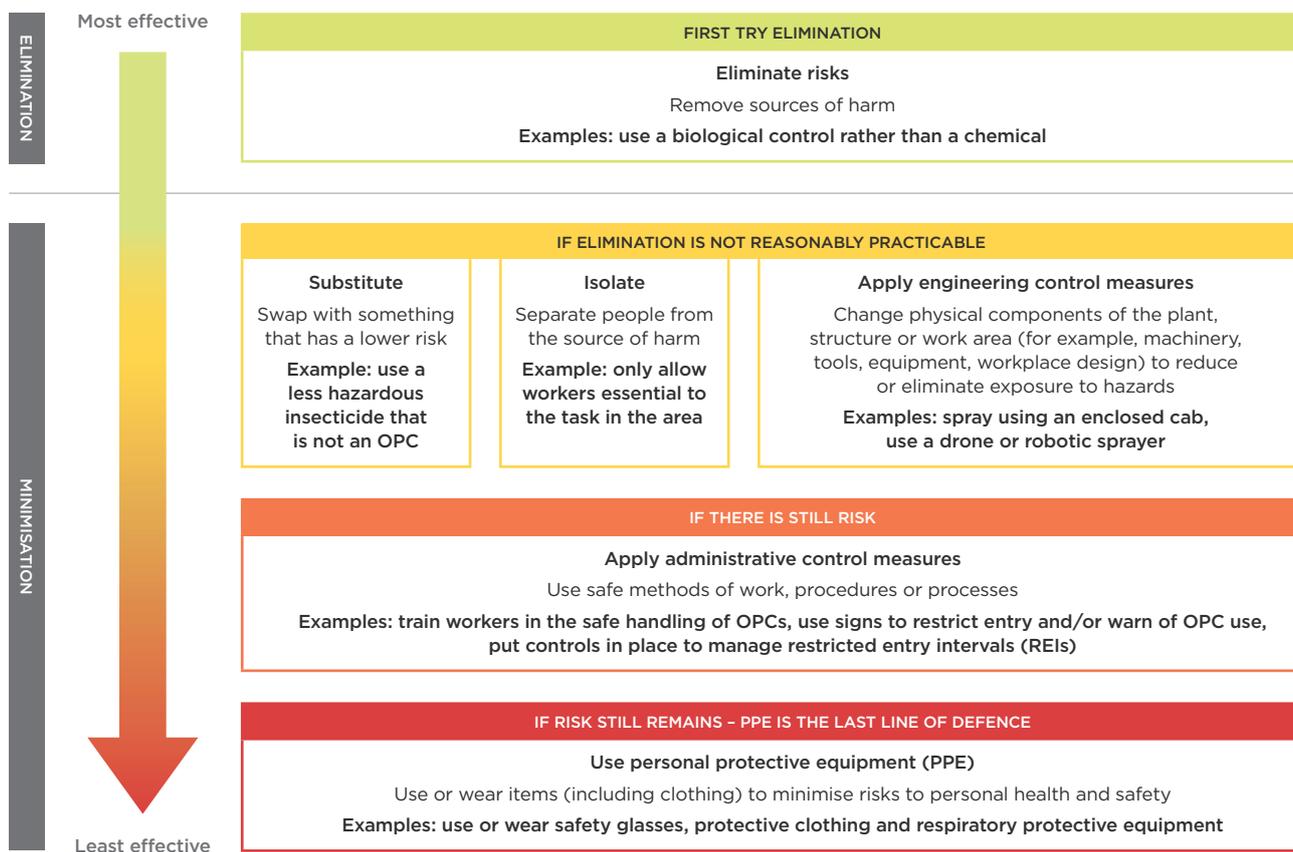
Workers can be poisoned if they are exposed to OPCs through inhalation, ingestion or absorption through the skin.

OPCs are neurotoxic and can damage the nervous system. Symptoms can range in severity from nausea or dizziness to unconsciousness, heart failure and even death. Ongoing exposure to low levels of OPCs can also lead to adverse health effects.

Protect your health

As a PCBU you need to take extra care when using OPCs so that you and your workers are exposed to as little of the product as possible.

If it is not reasonably practicable to eliminate the risks from OPCs, you must use the hierarchy of control measures to minimise risks.



Using the correct personal protective equipment (PPE)

While using OPCs workers must wear suitable PPE (suitable PPE will depend on whether you are using higher level controls or not). The product label and safety data sheet (SDS) will give you information about what PPE to wear when handling the product. This may include what respiratory protective equipment (RPE) to wear.

For guidance on using and maintaining PPE refer to the following WorkSafe guidance [Personal protective equipment \(PPE\)](#)

Workers and PCBUs: What to do after using OPCs



Wash hands thoroughly with soap and water before eating, drinking, chewing gum, smoking or using the toilet. If you don't, you will end up ingesting some of the insecticide, which can cause long-term health problems.



Once you have finished using OPCs for the day remove the clothes you were working in, have a shower or bath with soap and water, shampoo your hair and put on clean clothes.



Wash work clothes separately from other clothes before wearing them again.



PCBUs must have a current SDS available for OPCs at your workplace. Information about what to do in the event of a poisoning is usually given in Section 4 of the [SDS](#)

Restricted entry intervals

All OPCs have restricted entry intervals (REIs) for re-entry to application areas after spraying. Only people wearing appropriate PPE can enter the application area before the end of the REI.

To find out what REIs apply for specific OPCs and for guidance on managing REIs, refer to the following [Restricted entry intervals for pesticides](#)

Application signage

When OPCs with an REI are applied to indoor areas, signs must be placed at every routine point of entry to the area until the end of the application or the end of the REI, whichever ends later.

Signs must state:

- that application of a substance toxic to humans is being carried out
- that entry into the application area is not permitted unless PPE is worn
- the day on which the application commenced
- the time and date of the end of the REI.

Signs must also:

- comply with requirements for comprehensibility, clarity and durability
- identify the PCBU with management or control of the area.

You must remove the signs within three days of the end of the application or the end of the REI, whichever is the later.

For an outdoor application area there is no regulatory requirement to have signs. However, you may choose to make people aware that an REI is in place by putting up signs or sending out an electronic notification.

R Relevant 13.25

Equipment

Equipment used to handle OPCs must retain the substance and must not leak. Documentation for safe use and the maintenance of the equipment must be available to any worker handling the substance, and readily understandable by a fully trained worker.

R Relevant 13.7

Other requirements

You must meet requirements for SDS, labelling and training. Depending on the specific substances and amounts held, you may also need to meet site signage, storage, emergency management and certified handler requirements.

To help determine what requirements apply to your site and the substances you hold you can create an inventory of your hazardous substances using the [hazardous substances calculator](#)

Exposure monitoring

Exposure monitoring measures and evaluates what your workers are being exposed to while they are at work – it can be used to effectively manage health risks to workers.

It can be used to measure and evaluate the amount of OPCs workers are being exposed to.

Under HSWA you must ensure, so far as is reasonably practicable, the health and safety of workers. In some circumstances, this could mean monitoring worker exposure.

WorkSafe has set workplace exposure standards, listed in the table at the end of this guide, to help you evaluate and measure exposure.

Exposure monitoring should be carried out by suitably qualified, trained and experienced people who know how to carry out the monitoring you need (such as occupational hygienists). For more information [Exposure monitoring and health monitoring – guidance for business](#)

Biological exposure monitoring

When working with OPCs, workers should have regular blood tests to check their cholinesterase levels.

Periodic cholinesterase tests are a useful biological monitor to measure workers' exposure to OPCs.

This monitoring is usually done by a health service provider such as an occupational health nurse or general practitioner with a qualification in occupational health.

WorkSafe has set a [biological exposure index](#) (BEI) for cholinesterase activity in blood.

For the BEI to be an effective risk management tool a baseline cholinesterase level should be measured before using OPCs, as everyone has their own baseline level.

Without the baseline level a user will not be able to tell if their cholinesterase has been impacted by exposure to OPCs.

Recommended actions are as follows:

- if less than 60% of baseline: suspend from working with pesticides which inhibit cholinesterase activity
- if less than 80% of baseline: repeat test to confirm result
- if greater than 75% of baseline: permit a previously suspended worker to re-start normal duties.

Health monitoring

Health monitoring looks at whether a worker's health is being harmed because of what they are being exposed to while they are at work.

Under HSWA you must ensure, so far as is reasonably practicable, the health and safety of workers. In some circumstances, this could mean monitoring the health of workers.

Your monitoring provider should advise on the appropriate type of monitoring, and when, where and how often the monitoring should occur.

Various sources state that blood exposure levels of acetylcholine is a type of health monitoring.

However, WorkSafe considers that to be biological exposure monitoring, not health monitoring.

If you do provide health monitoring, there are certain requirements you must meet. For more information [Exposure monitoring and health monitoring – guidance for businesses](#)

Record of application

You must keep a written record of each application of an organophosphate or carbamate applied for plant protection purposes. You can include this information in your spray diary.

Your record must include:

- the product or chemical name of the substance
- the date and time of each application
- the amount of the substance applied
- the location the substance was applied

- the measures you have taken to ensure there are no adverse effects beyond the boundary into an adjoining property or sensitive area
- if the substance is applied to or discharged into the air, a description of the wind speed and direction when the application took place
- the name of the worker who used the substance and the address of their workplace.

R Relevant 13.3/13.4

OPCs – active ingredients and trade names

ACTIVE INGREDIENT	CURRENTLY REGISTERED TRADE NAME PRODUCTS	WORKPLACE EXPOSURE STANDARDS
Acephate	Orthene WSG, Icefate	*
Carbaryl	Grochem Carbaryl, Sevin Flo	Time weighted average (TWA) 5mg/m ³
Chlorpyrifos ^{††}	Rainifos, Cardinal, Donaghys INSEC480, Hortcare Chlorpyrifos 50 EC, Chlorpyrifos 500EC, CropSure Sureban 500EC, CHLOR-P 480EC, Synergy Chlor-P, Pyninex 500 EC, Outperform 500, Genfarm Chlorpyrifos 500 Insecticide, SUSCON GREEN, Kensban 500 Insecticide, TOPPEL 500	TWA 0.2mg/m ³
Diazinon	Diazate, Dianex 600 EW, Dart 800, Caligula, Dianex, Laoch 600 EW Insecticide, Zagro Diazinon 600EW, Diazol 800 Insecticide, Gesapon 20G, Diazol Insecticide, Diazinon 20G, Defeat 800, DEW 600	TWA 0.1mg/m ³
Dichlorvos [†]	DDVP Insecticide Device	TWA 0.1ppm 0.9mg/m ³
Dimethoate	Danadim Progress	*
Maldison (Malathion)	Fyfanon 440 EW, Cricket Bait, Malathion 95 Insecticide, 'CRICKOFF PRO' Advanced	TWA 1mg/m ³
Methomyl	Lumina Plus, Pesover	TWA 2.5mg/m ³
Oxamyl	Currently not registered	*
Pirimicarb	Piritek, Piraphid Xtra, Pirimor 50, Pirigro 500 WDG, Prohive, Aphidex WG Insecticide	*
Pirimiphos-methyl [†]	SIL0 500EC, Pirithrin, ATTACK, Ambush, Actellic 50 EC, Actellic Dust	*

Note: The above list is subject to change as products are frequently removed and added.

* WorkSafe has not set a workplace exposure standard for this active ingredient.

† There are additional requirements for dichlorvos plant protection products and pirimiphos-methyl smoke generators in the following Safe Work Instrument [Additional and Modified Requirements for Specified Class 6 and 8 Substances – Safe Work Instrument 2017](#)

†† The approvals for chlorpyrifos containing substances are currently being phased out with some approvals being able to be used up until 8 July 2027. See www.epa.govt.nz for further information.

Non-approved organophosphates

The following organophosphates are no longer approved for use. If you have any products containing these active ingredients you should dispose of them immediately:

- fenamiphos
- methamidophos
- prothiophos
- terbufos.

For more information on disposal of OPCs refer to [Working safely with chemicals and fuels on farms](#)

This guidance covers requirements under the Health and Safety at Work Act 2015 and regulations only. Environmental controls are set under the Hazardous Substances and New Organisms (HSNO) Act 1996. To find out about the HSNO controls see [Approved hazardous substances with controls](#)