

A guide to using agricultural chemicals in Victoria

Ground-based spray application

AGRICULTURE  VICTORIA

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Accessibility

If you would like to receive this publication in an accessible format, please telephone Agriculture Victoria on 1300 502 656, email info@agriculture.vic.gov.au or go to www.agriculture.vic.gov.au.

This document is also available in Word format at www.agriculture.vic.gov.au



1. INTRODUCTION

The purpose of this guide is to provide Victorian agricultural chemical users, including farmers, commercial operators and their employees, with practical guidelines for using agricultural chemicals safely and effectively.

Victorian legislation regulating the use of agricultural chemicals is referred to throughout this guide. A key focus is the responsibilities of users, specifically around ensuring that agricultural chemicals are used appropriately and that spray applications do not move beyond the target area.

Note that this guide only covers ground-based spray application. For information about aerial spray application, please refer to *Aerial spraying of agricultural chemicals - A guide for land managers to ensure that spraying is done responsibly*.

Please note that the information in this guide does not replace user obligations under Victoria's *Agricultural and Veterinary Chemicals (Control of Use) Act 1992 ('the Act')* and its regulations, which control agricultural and veterinary chemical use in Victoria. All users of chemicals need to be aware of the Act and comply with its regulations, as well as other relevant legislation. All the legislation referred to in this guide was in force as of September 2018.

1.1 Definitions

Agricultural chemical product

Any chemical that is defined as an 'agricultural chemical product' under the *Agricultural and Veterinary Chemicals Code Act 1994*. This includes any agricultural chemical product (herbicide, fungicide, insecticide, growth regulator or miticide) used to control pests or to modify the physiology of a plant or pest.

APVMA

Australian Pesticides and Veterinary Medicines Authority.

Drift

The airborne movement of agricultural chemicals outside the target area as droplets, solid particles or vapour that occurs shortly after application.

Good agricultural practice (GAP)

The nationally recommended, permitted, or registered usage pattern of a chemical that is necessary for safe, effective, and reliable pest control under actual conditions at any stage of production, storage, transport, distribution and processing of food commodities and animal feed.

Inversion: Atmospheric inversion, temperature inversion

A layer of air near the ground in which air temperature increases with height. This is an 'inversion' of the way air temperature typically decreases the higher you go above the ground.

Droplet spray drift and vapours can become trapped under an inversion and travel long distances from the target area. Cold drainage winds (katabatic winds) can increase the likelihood of off-target drift in inversion conditions. Inversions commonly form in the late evening and strengthen overnight, and often remain the next morning until the ground and the surrounding air heats up.

Maximum residue limit (MRL)

The maximum concentration of a chemical that is legally permitted to be present in or on a food, agricultural commodity, or animal feed. MRLs are expressed in milligrams of the chemical per kilogram of the food (mg/kg).

Micron (μ)

The standard measurement for droplet size. $1000 \mu = 1 \text{ mm}$.

Mister

Spraying equipment that uses air for dispersing the spray. This includes mist blowers, orchard sprayers, air blast sprayers, air shear sprayers and any other spraying equipment that produces a droplet size spectrum that is classified as fine or very fine under *ANSI/ASAE S572.1, Spray Nozzle Classification by Droplet Spectra*.



Visible atmospheric inversion above a pasture paddock

OH&S

Occupational Health and Safety.

Off-label use

Using a registered chemical product in a way that is not specified on the label.

Pest

An unwanted organism (e.g. weed, insect, disease, nematode, or mite).

Residue

The amount of a chemical treatment, or its breakdown products, that remains in or on produce. Residue can include chemical elements (such as heavy metals) or pesticides, which may have come into contact with the produce through agricultural or industrial activities or natural circumstances.

Safety Data Sheet (SDS)

Previously called a Material Safety Data Sheet (MSDS), this document provides information on the properties of hazardous chemicals and how they can affect health and safety in the workplace.

Sensitive area

An area of agricultural, community or environmental significance (e.g. schools, hospitals, sensitive crops, waterways, livestock, organic farms, and bee foraging areas) that users must consider when undertaking a risk assessment prior to and during spraying.

Spraying equipment

Any equipment or machine used for spreading, spraying, or dispersing an agricultural chemical product.

Target area

In relation to agricultural spraying, the target area is the area within which the spray application is intended to control pests.

Withholding period (WHP)

The minimum length of time that must pass between the last time an agricultural chemical was applied to a crop and the time that agricultural produce is harvested, sold, or used. WHPs are stated on product labels under the 'Directions for use' table.

1.2 Useful websites

Agriculture Victoria Chemical Use:
www.agriculture.vic.gov.au/chemicaluse

Australian Pesticides and Veterinary Medicines Authority:
www.apvma.gov.au

ChemClear:
www.chemclear.com.au

drumMUSTER:
www.drummuster.com.au

Department of Health:
www.health.vic.gov.au

Environmental Protection Authority (EPA):
www.epa.vic.gov.au

Food Standards Australia and New Zealand:
www.foodstandards.gov.au

SAI Global:
www.saiglobal.com

Victoria Government Gazette:
www.gazette.vic.gov.au

Victorian Legislation and Parliamentary Documents:
www.legislation.vic.gov.au

WorkSafe Victoria:
www.worksafe.vic.gov.au



2. LEGISLATION

The Commonwealth and Victorian governments regulate agricultural and veterinary chemicals in Victoria. The Commonwealth Government regulates the supply and sale of chemicals, while the Victorian Government regulates their use.

2.1 Commonwealth legislation

The Commonwealth Government regulates agricultural and veterinary chemicals through the *Agricultural and Veterinary Chemicals Code Act 1994* and its associated regulations.

The Australian Pesticides and Veterinary Medicines Authority (APVMA) administers this Act. The APVMA is responsible for regulating agricultural and veterinary chemicals from importation and manufacture through to the point of retail sale.

2.2 State legislation

The *Agricultural and Veterinary Chemicals (Control of Use) Act 1992* ('the Act') controls the use of agricultural and veterinary chemicals in Victoria and is administered by Agriculture Victoria.

The purpose of the Act is to:

- regulate the use, application and sale of agricultural and veterinary chemical products, fertilisers and stock foods and the manufacture of fertilisers and stock foods
- provide protection against financial loss caused by damage and contamination to land, plants, and stock from agricultural spraying
- regulate the production of agricultural produce to avoid chemical contamination of food for human consumption.

The Agricultural and Veterinary Chemicals (Control of Use) Regulations 2017 and various Orders made under the Act provide the regulatory framework for chemical use in Victoria.

The objectives of the regulations are to:

- specify the records that users and sellers of certain chemical products must make and keep
- specify requirements for labels and advice notes accompanying certain veterinary chemical products sold by veterinary practitioners for the treatment of stock
- specify what information must be provided in relation to certain agricultural spraying to be carried out on land near schools, hospitals, aged care services or children's services
- specify what equipment should be used when carrying out aerial spraying

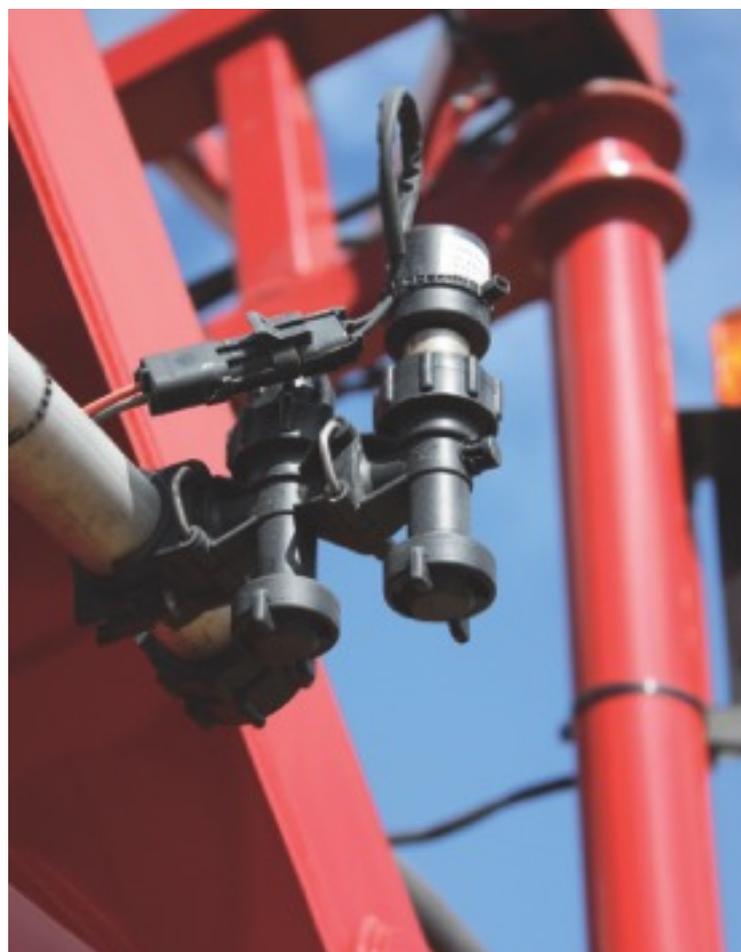
- list chemical products that must be used in accordance with instructions on a permit or a label
- prohibit the possession of certain agricultural chemical products
- regulate other matters authorised by the Act.

Other relevant State legislation includes:

- *Environment Protection Act 1970*
- *Drugs, Poisons and Controlled Substances Act 1981*
- *Dangerous Goods Act 1985*
- *Public Health and Wellbeing Act 2008*
- *Occupational Health and Safety Act 2004.*

Acts and regulations can be downloaded from the Victorian Legislation and Parliamentary Documents website at www.legislation.vic.gov.au.

Orders that are related to the Act can be downloaded from the Victoria Government Gazette website at www.gazette.vic.gov.au.



Pulse nozzles on a boom spray



3. TRAINING

Training is a vital part of safe agricultural chemical use. Agricultural chemicals can be dangerous if used incorrectly. People who are regularly exposed to chemicals or use them on a regular basis are at the greatest risk.

Anyone who will be using chemicals should complete an appropriate chemical use training course. These courses are designed to ensure users have the knowledge and skills they need to safely transport, handle, apply and store agricultural chemicals.

Successful completion of chemical use training courses is also a prerequisite for certain licences and permits (see 4 *Licences and permits*).

3.1 Employer responsibilities

Like all employers, farmers, land managers and contractors are responsible for ensuring that employees are appropriately trained in the safe use of agricultural chemicals and that they have an adequate understanding of:

- the pest being targeted
- the chemical and the product label
- the equipment and application method
- occupational health and safety (OH&S) issues
- sensitive areas (in relation to chemical use)
- any regulatory requirements (e.g., record keeping, notification, permits, licences).



4. LICENCES AND PERMITS

4.1 Agricultural Chemical User Permit (ACUP)

In Victoria, a person must hold an ACUP, or be working under the direct and immediate supervision (i.e., within sight and sound) of an ACUP holder to use an agricultural chemical product that:

- is a 'restricted use' chemical (see 5.3.3 'Restricted use' chemicals)
- is a pest animal bait containing 1080 (sodium fluoroacetate) or 4-aminopropiophenone (PAPP)
- contains pindone concentrate for the preparation of poison baits
- contains methyl bromide or the liquefied gas formulation of phosphine used for fumigation, or
- contains copper, chrome, and arsenic for use in specialist timber treatments.

The ACUP essentially allows a farmer or land manager to access and use the aforementioned chemicals on their own property, or on land they manage.

An ACUP is also required to purchase agricultural chemical products that are classified as APVMA 'Restricted Chemical Products' (see *Table A: APVMA 'Restricted Chemical Products'*). In Victoria, these are commonly referred to as 'restricted supply' chemicals.

Agricultural Chemical User Permit

JAMES SAMPLE 9 SAMPLE STREET SAMPLETOWN VIC 3341 PERMIT EXPIRY 01/01/2020	PERMIT NUMBER 12345 PERMIT TYPE 1 STANDARD ONLY
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Economic Development,
 Jobs, Transport
 and Resources

AGRICULTURE VICTORIA

The holder of this permit is authorised under Section 25A(2)(b) of the *Agricultural and Veterinary Chemicals (Control of Use) Act 1992* to use agricultural chemical products that:

- are Schedule 7 Poisons (DANGEROUS POISONS)
- contain atrazine, metham sodium or ester formulations of MCPA, 2,4-D, 2,4-DB or triclopyr.

Permit Holder's Signature

CONDITIONS OF USE:
 This permit does not authorise the use of agricultural chemical products containing methyl bromide, or phosphine formulated as liquefied gas, or pindone concentrate for the preparation of poison baits, or 1080 (sodium fluoroacetate), or PAPP (4-aminopropiophenone).

CHANGE OF ADDRESS: You must notify DEDJTR within 7 days of your change of address by contacting the Customer Service Centre on 136 186 or email chemical.licensing@ecodev.vic.gov.au

Standard ACUP

Table A: APVMA 'Restricted Chemical Products'

Chemical products that contain:
Sodium fluoroacetate (1080)
4-aminopropiophenone (PAPP)
Acrolein
Pindone concentrate for the preparation of poison baits
Mevinphos
Rabbit haemorrhagic disease virus (RHDV) (rabbit calicivirus) in injectable form and used for the preparation of poison baits
Pre-construction termiticide products that contain:
Bifenthrin
Chlorpyrifos
Vertebrate pest control chemical products that contain:
Alphachloralose
4-amino pyridine

Note: The 'Restricted Chemical Products' listed above are registered as at the time of publication.

People who apply agricultural chemicals on a commercial basis, such as spray contractors or pilots do not require an ACUP. Instead, they must hold or be working under the appropriate commercial licence. (see 4.2 Commercial services).

An ACUP is valid for 10 years from the date of issue. To apply for an ACUP, you must complete an accredited course in agricultural chemical use, such as the Agvet Chemical User Course run by various TAFE institutes and private providers. No additional training is required during the 10-year period or to renew an ACUP, but it is highly recommended that chemical users undertake a refresher course every 5-10 years.

Agricultural Chemical User Permit

JAMES SAMPLE
9 SAMPLE STREET
SAMPLETOWN VIC 3341

PERMIT NUMBER
12345

PERMIT EXPIRY
01/01/2020

PERMIT TYPE 6
PINDONE CONCENTRATE
and FUMIGANTS

Economic Development,
Jobs, Transport
and Resources

AGRICULTURE VICTORIA

The holder of this permit is authorised under Section 25A(2)(b) of the *Agricultural and Veterinary Chemicals (Control of Use) Act 1992* to use agricultural chemical products that:

- contain gaseous methyl bromide, chloropicrin or phosphine for fumigation
- contain pindone concentrate for the preparation of poison baits.

Permit Holder's Signature

CONDITIONS OF USE:
This permit does not authorise the use of agricultural chemical products containing Schedule 7 Poisons (DANGEROUS POISONS) other than those listed above, or products containing atrazine, metham sodium or ester formulations of MCPA, 2,4-D, 2,4-DB or triclopyr.

CHANGE OF ADDRESS: You must notify DEDJTR within 7 days of your change of address by contacting the Customer Service Centre on 136 195 or email chemical.licensing@ecodev.vic.gov.au

Pindone concentrate and fumigants ACUP

Agricultural Chemical User Permit

JAMES SAMPLE
9 SAMPLE STREET
SAMPLETOWN VIC 3341

PERMIT NUMBER
12345

PERMIT EXPIRY
01/01/2020

PERMIT TYPE 11
STANDARD,
PINDONE CONCENTRATE,
1080 and PAPP

Economic Development,
Jobs, Transport
and Resources

AGRICULTURE VICTORIA

The holder of this permit is authorised under Section 25A(2)(b) of the *Agricultural and Veterinary Chemicals (Control of Use) Act 1992* to use agricultural chemical products that:

- are Schedule 7 Poisons (DANGEROUS POISONS)
- contain atrazine, metham sodium or ester formulations of MCPA, 2,4-D, 2,4-DB or triclopyr.
- contain pindone concentrate for the preparation of poison baits
- contain 1080 (sodium fluoroacetate), or PAPP (4-aminopropiophenone).

Permit Holder's Signature

CONDITIONS OF USE:
This permit does not authorise the use of agricultural chemical products containing methyl bromide, or phosphine formulated as liquefied gas. Use of 1080 and PAPP must comply with the current version of 'Directions for the Use of 1080 and PAPP Pest Animal Bait Products in Victoria'.

CHANGE OF ADDRESS: You must notify DEDJTR within 7 days of your change of address by contacting the Customer Service Centre on 136 195 or email chemical.licensing@ecodev.vic.gov.au

Standard, pindone concentrate and 1080 ACUP

4.2 Commercial services

Any business that provides a commercial service of applying agricultural chemicals (other than residential garden situations) for a fee or reward must hold one of the following licences:

- **Commercial Operator Licence (COL):** required by people who operate a business that provides ground-based or post-harvest agricultural chemical application services for a fee or reward in Victoria.
- **Agricultural Aircraft Operator Licence (AAOL):** required by businesses that provide an aerial spraying service.
- **Pilot (Chemical Rating) Licence (PCRL):** required by pilots who conduct the aerial application of agricultural chemicals and pest animal baits.
- **Department of Health Pest Control Licence (PCL):** required by pest control operators who apply pesticides primarily in domestic and commercial situations.

Each licence has different training and accreditation requirements.

4.3 Off-label use permits

To use a 'restricted use' chemical (see 5.3.3 *'Restricted use' chemicals*) off-label (see 5.3.4 *Off-label use*), you must hold permit issued by the APVMA. Information on the APVMA permit process, including a search tool for current permits, is available at <https://apvma.gov.au>.

4.4 Other permits

Agriculture Victoria issues a number of other chemical permits, including:

- Section 25A(2)(b) permits, which cover the use of 1080 or PAPP contrary to the current *'Directions for the Use of 1080 and PAPP Pest Animal Bait Products in Victoria'*

Agricultural Chemical Control Area (ACCA) permit (see 10.5 *Agricultural Chemical Control Areas (ACCAs)*).

For more information and application forms, visit www.agriculture.vic.gov.au/chemicals (under *'Licences and permits'*) or phone the Customer Service Centre on 1300 502 656 or Department of Health Pest Control Program hotline on 1300 887 090.



5. PLANNING AND PREPARATION

5.1 Risk management with agricultural chemicals

Anyone who uses chemicals needs to be aware of the potential risks involved. There are long-standing processes for risk management that involve the following steps:

1. Identify the hazard.
2. Assess the risk.
3. Control the risk.
4. Review.

The hierarchy of control of risks is another important concept. The hierarchy of control is a stepwise process, starting with step 1 as the most desirable option. Movement to the next step in the hierarchy is only allowed if the option below it is not possible.

The steps in the hierarchy of control are:

1. Eliminate - e.g. use an alternative non-chemical control method.
2. Substitute - e.g. use a less hazardous chemical instead of a more hazardous chemical.

3. Isolate - e.g. work inside a filtered cabin on the tractor.
4. Engineering control - e.g. use closed transfer systems for decanting chemicals.
5. Administrative control - e.g. require all chemical users to complete a farm chemical user course.
6. Personal Protective Equipment - e.g. wear overalls and protective gear.

For further information on risk management and control, contact WorkSafe Victoria on (03) 9641 1444 or 1800 136 089 (toll free) and obtain a copy of the publication *Managing Safety in Your Workplace*.

5.2 Consider whether a chemical is required

To begin, you must establish if the problem or symptoms you are seeing are caused by a pest. Problems can also be caused by factors like poor nutrition or waterlogging, which are not related to pests.

If a pest is the reason for the problem, you need to work out the actual cost of the damage it is causing to your crop or produce. Be sure that it makes financial sense to control the pest (i.e. the pest is causing enough damage that the cost of controlling it is less than the lost value of the crop or produce). This is commonly called the 'economic threshold'.

Integrated Pest Management (IPM) is the term used to describe a coordinated approach to dealing with pests. IPM focuses on using multiple control methods to achieve satisfactory pest control. Recognising the importance of beneficial insects (i.e. those that predate upon the target pest) is key to successful IPM.

Control methods include:

- Mechanical - e.g., ploughing, hoeing, pruning.
- Cultural (also called management control) - e.g., hygiene strategies, crop rotations, controlled environments.
- Biological - e.g., predator release, companion planting or pheromone disruptors.
- Genetic - e.g., disease, insect, or chemical-resistant varieties of plants.
- Quarantine - creating an exclusion area (e.g., rabbit-proof fencing, plant movement restrictions).
- Chemical - e.g., herbicides, fungicides, insecticides.



Fumigating rabbit warrens

These same principles can be applied to Integrated Diseases Management (IDM), which is essentially preventing and managing diseases in crops.

Use chemical controls wisely. Using chemicals inappropriately not only wastes time and money, but it may also create more problems, such as chemical resistance or increase populations of harmful insects due to loss of beneficial insects.

5.3 Select the right chemical

If chemical control is the best option, choose the most suitable chemical for the job and the least toxic to the operator, beneficial insects, and the environment.

You must only use agricultural chemical products that are registered by the APVMA (unless you have a permit authorising you to use an unregistered chemical).

5.3.1 Chemical product labels and Safety Data Sheets

Wherever possible, you should select a registered chemical that is approved for your intended use. All users of chemicals need to understand the information on chemical product labels. Labels for agricultural chemical products contain instructions to help users store, prepare and use products safely and efficiently.

Information found on labels includes:

- active constituents (the name of the main chemical ingredient(s) that produce the intended effect)
- approved uses
- situations in which the chemical can be used
- pests the chemical is registered to control
- mixing instructions
- application rates and methods
- warnings, restraints, and prohibitions
- withholding periods (WHP)
- storage and disposal instructions
- safety and first aid information.

For more information on understanding pesticide chemical labels, contact the APVMA on (02) 6210 4700 and obtain a copy of the publication *Understanding Pesticide Chemical Labels*.

To ensure that the domestic maximum residue limit (MRL) is not exceeded, you need to ensure you are using properly calibrated equipment, following the application rate and frequency and the observing the WHP shown on the label.

Labels may also contain restraint statements and specify mandatory spray droplet size and no-spray zones to minimise spray drift (see 10.2 *Label information on managing spray drift*).

Safety Data Sheets (SDSs) provide further information about the chemical and its potential impact on the user and the environment. They are

available from manufacturers or chemical resellers. A copy of relevant SDSs must be provided on request to an employee who is applying the chemical.

5.3.2 Formulations

When selecting a chemical, think about which formulation you should use. Some formulations are more likely to cause off-target damage than others. More volatile chemical formulations (e.g. esters) are more prone to drift as vapour, either during or after application.

As an alternative to esters, consider other registered products such as amine formulations of 2,4-D and MCPA, which present a lower risk.

Adjuvants may be added by some users to enhance or modify the action of the agricultural chemical. Adjuvants can have a variety of functions, such as improving compatibility, modifying droplet formation and behaviour to reduce spray drift, or enhancing the uptake of the chemical by the target pest or weed.

Take particular care to ensure that adjuvants are appropriate for use in any given setting as inappropriate use may cause unintended consequences such as crop damage. Seek professional advice from your chemical reseller or advisor before use.

5.3.3 'Restricted use' chemicals

Restrictions apply to the use of certain agricultural chemicals in Victoria. These are known as 'restricted use' chemicals.

'Restricted use' chemicals are agricultural chemical products that:

- are Schedule 7 Poisons (Dangerous Poisons)
- contain atrazine
- contain metham sodium
- contain ester formulations of 2,4-D, 2,4-DB, MCPA or triclopyr.

To use a 'restricted use' chemical, you must hold a valid ACUP, be working under the direct supervision of an ACUP holder or hold another form of authorisation (see 4.1 Agricultural Chemical User Permit (ACUP) and 4.2 Commercial services).

Restricted use chemicals may be used off-label in the following low-risk circumstances:

- use at a lower application rate, lower concentration, or lower frequency than the label for that use
- use for the control of a different pest than stated on the label

- mixing with another registered chemical
- use in accordance with a label use approved for two or more other states or territories.

The above does not apply to chemicals used for pest animal control, or if a product label includes critical comments or restraints in relation to geographical location, timing or restriction that would prohibit its use in Victoria.

It is illegal to use 'restricted use' chemicals in any other manner off-label unless the user holds a permit issued by the APVMA (see 4.3 Off-label use permits) or Agriculture Victoria (see 4.4 Other permits).

5.3.4 Off-label use

Off-label use refers to situations when a registered chemical is used in a way that is not listed on the product label. This may be using a chemical on a pest or crop that is not listed on the label.

In Victoria, it is not illegal to use agricultural chemicals in an off-label manner, provided that:

- the maximum label rate for that use **is not** exceeded, unless a permit has been issued by the APVMA
- the chemical **is not** used at intervals more frequent than the intervals for that use as stated on the label, unless a permit has been issued by the APVMA
- the chemical **is not** used in a way that the label specifically states it must not be used (e.g., 'DO NOT apply by air'), unless a permit has been issued by the APVMA
- an insecticide **is not** applied to stored grain, grain during transit, or immediately before transit by means of a road transport vehicle unless that person holds a Section 25A permit that has been issued by Agriculture Victoria, authorising that use (see 4.3 Off-label use permits)
- the agricultural chemical **is not** applied to an animal unless a permit for that use has been granted by the APVMA or the use is in accordance with the written instructions from a veterinary practitioner and the use is not prohibited (e.g., in a 'DO NOT' statement).

There are also some additional specific restrictions that Agriculture Victoria has placed on the use of certain chemicals. These include prohibiting the following:

- use of veterinary chemicals on plants
- use of agricultural chemicals on animals, unless authorised by a veterinary practitioner
- use of methiocarb on grapevines
- use of mevinphos as a vermin destroyer for the control of vertebrate animals
- use of paraquat, mevinphos, parathion, parathion methyl, methamidophos and chlorthiophos via back-mounted spraying equipment
- use of metham sodium via off label application methods e.g., use in flood irrigation, impact sprinklers etc.
- use of antibiotics, peroxide, and perforate as dairy cleansers.

Off-label use is not recommended by Agriculture Victoria and is not covered by a manufacturer's warranty. All aspects of off-label use are the user's responsibility, including efficacy, chemical residues in produce and the environment, environmental safety, and OH&S issues. If a chemical product is used off-label, the resulting residues must comply with MRL standards, which often require there be no detectable trace of the chemical in the treated produce.





6. NOTIFICATION

Notification laws apply when applying agricultural chemicals by air or mister within 200 m of a school, hospital, aged care service, or children’s service (e.g. kindergarten or childcare centre). There are also notification requirements prior to using 1080 or PAPP pest animal baits.

Whenever a person is employed or contracted to carry out agricultural spraying by aerial spraying or mister (other than standard boom spraying), the **occupier of the land** must advise that person in writing of:

- the existence and location of any school, hospital, aged care service or children’s service within 200 m of the land to be sprayed.

The employee or spray contractor must not begin spraying without this information.

At least 24 hours before spraying is to occur within 200 m of these facilities, the **spray employee or contractor** must provide the occupier of the land with:

- the trade name of the agricultural chemical product to be used
- the proposed time, date, and duration of the spraying.

At least 12 hours before spraying is to occur within 200 m of these facilities, the **occupier of the land** must make every reasonable effort to inform the school principal, site manager or person in charge of the facility of:

- the trade name of the chemical product to be used
- the location of the proposed spraying
- the proposed time, date, and duration of spraying.

A notification template is available at www.agriculture.vic.gov.au/chemicaluse (under *Application forms*).

Regardless of whether it is a legal requirement or not, it is good practice to notify neighbouring properties of your intention to use any agricultural chemicals. This gives them a chance to take protective measures on their properties if needed (e.g. moving bees, diverting flow from water tanks, covering ponds, taking in washing). Notification is also required when a person uses 1080 pest animal baits (shelf stable and perishable), 1080 capsules (used in a canid pest ejector (CPE)), or PAPP pest animal baits. The notification requirements for these products differ from those outlined above and are outlined in the *Directions for the use of 1080 and PAPP pest animal bait products in Victoria*.



Trailing boom sprayer in operation



7. TRANSPORTATION, STORAGE, MIXING AND DISPOSAL OF FARM CHEMICALS

Before you transport, store, or handle a chemical product, always read and follow the directions on the label and SDS.

Use the personal protective equipment (PPE) listed on the product label and ensure all PPE is in good condition (see *12.2 Personal Protective Equipment (PPE)*).

Pay particular attention to the chemical's compatibility with other chemicals.

7.1 Transportation

To avoid spills and other accidents, take care when transporting chemical products. Where possible, have products delivered to the location where you will be using them.

If you must pick up chemicals yourself using a vehicle:

- securely stow chemicals in a separate compartment from passengers, food, stockfeed and fertiliser (the boot of a car and the cargo area of a station wagon are not separate compartments)
- ensure containers are properly packaged to avoid breakage
- display dangerous goods hazard symbols or class labels and Hazchem signs as required (contact WorkSafe Victoria for more information).

7.2 Storage and possession of chemicals

Storing agricultural chemicals correctly helps to prolong their shelf life and protect people, animals, and the environment. Chemical product labels and SDS contain storage directions that you should follow.

Chemicals should be safely locked away from children, unauthorised people, and animals.

Chemicals should be stored according to 'The Storage and Handling of Agricultural and Veterinary Chemicals' (Australian Standard 2507-1998), which can be purchased from SAI Global, www.saiglobal.com.

If storing small quantities of chemicals, you should:

- maintain a list of all chemicals kept in storage
- store chemicals in a cool, well-ventilated area that is away from direct sunlight (e.g., shed), lockable, has an impervious (chemical-proof) floor and shelving and is bunded to contain spills
- avoid stockpiling chemicals by purchasing them only as needed
- store chemicals in their original labelled containers (if labels come off, re-label the container)
- keep all SDS in a register nearby for easy access
- never store chemicals in food or drink containers

- separate incompatible/different chemical types to avoid cross-contamination
- never store liquid-based chemicals above solid types of chemicals such as powders or granules
- never store chemicals with seeds, fertilisers, protective clothing or stockfeed
- ensure running water, first aid and other facilities as required by the SDS are available.

Note: If you store chemicals that are classified as 'Dangerous Goods' in large quantities, there are special storage requirements under the Dangerous Goods (Storage and Handling) Regulations 2012 that apply. Contact WorkSafe Victoria for information and advice.

The possession of some unregistered agricultural chemicals is prohibited.

You must not possess an agricultural chemical product that contains any of the following:

- arsenic (other than arsenic used to treat wood)
- fenthion
- fenthion-ethyl
- parathion
- parathion-ethyl
- parathion-methyl
- strychnine.

Possession of these chemicals is allowed if they are being stored at a facility for disposal, are in transit to a facility for disposal, or where there is an applicable permit (See 7.4 *Disposal*).

7.3 Decanting and mixing

Decanting and mixing chemicals poses the highest risk to handlers because chemicals are usually in concentrated form. The site where chemicals are mixed and loaded prior to application is also at risk of contamination from spills.

Choose a mixing site that is away from people, animals and stockfeed. Never eat, drink, or smoke when mixing chemicals and don't allow children or unauthorised persons near the mixing operation.

The mixing site must be well ventilated, have good lighting and be set up to prevent any chemicals from draining into waterways or sewers. There needs to be a personal wash-down facility on the mixing site, with a ready supply of clean water and soap.

Only mix as much chemical as you need for immediate use. Farm chemicals should be decanted in a way that minimises the risk of the handlers coming into contact with chemicals. Chemicals designated as 'Hazardous Substances' are not permitted to be decanted unless the original label is attached to the new container. Wherever possible, use closed-tank mixing systems to fill application equipment. Take precautions to minimise the risk of spillage.

Hoses and pipes used to fill the spray tank with water should be fitted with a non-return valve, particularly if the hose is submerged while filling. This will prevent siphoning back from the tank into the water source if the supply is interrupted. Agitation should be sufficient to keep farm chemicals thoroughly mixed and suspended.

Triple rinse empty containers and drain rinse water into the spray tank.

7.4 Disposal

Empty chemical containers and unwanted chemicals must be disposed of correctly. Follow the label instructions for disposal requirements.

Concentrated chemicals should never be disposed of on-farm. Disposal must be carried out by a licensed waste disposal company or chemical collection program (e.g. ChemClear, visit www.chemclear.com.au or phone 1800 008 182 for information).

Chemicals to be disposed of should be stored in a secure and segregated location whilst arrangements are made to dispose of them.

7.4.1 Containers

All containers should be emptied, triple rinsed and punctured through the lid opening and out the bottom before disposal.

Disposal methods include:

- returning refillable containers to the chemical reseller
- disposing of the container through a commercial disposal program that collects and recycles chemical containers that have been emptied and cleaned (e.g., drumMUSTER - for information, visit www.drummuster.com.au, phone 1800 008 707 or contact your local council)
- disposing of containers at an approved municipal landfill tip.

7.4.2 Rinse water

Rinse and washdown water should be disposed of following Environmental Protection Authority (EPA) guidelines (visit www.epa.vic.gov.au for information). All empty chemical containers should be triple rinsed directly into the spray tank. If this is not possible, rinse water should be applied to land in an area that will not contaminate the environment or affect people, livestock or produce. Do not allow any contaminated water or chemical to drain into ground water, storm drains, sewers, or other water supplies.

Applying leftover spray mix to the same crop runs the risk of causing crop damage, unacceptably high residues, and loss of efficacy.



8. SPRAY EQUIPMENT AND PRACTICES

The aim of a successful spray application is to ensure the correct amount of agricultural chemical is applied to the intended target, with no contamination to off-target areas. Before applying the chemical, consider what type of equipment is best suited to the job you intend to undertake.

8.1 Maintenance

Regular maintenance of spray equipment is essential to keep it in peak operating condition. Spray equipment should be maintained to manufacturer specifications and standards outlined below:

- Nozzles should be replaced if worn or damaged, when there is a +/- 10% variation in their rated output, or each season if the rate has not been checked.
- Certain types of formulations (e.g., flowable suspension concentrates) tend to wear standard nozzles faster than other formulations, so you will need to monitor nozzles for wear more frequently. Consult your nozzle manufacturer for specific information.
- Spray equipment should be maintained in good order:
 - hoses free of kinks, twists, cracks or splits
 - filters clean and functional.

- Check the sprayer's pressure gauge annually against a new or calibrated pressure gauge.
- Nozzle position and angle should be visually checked before each spray operation.
- Check that stabilisers on boom sprayers are working properly at the beginning of every season.

8.2 Calibration

The sprayer should be calibrated regularly to ensure chemicals are applied evenly and at the appropriate application rate. A properly calibrated sprayer will reduce the risk of applying too much chemical, which is costly and can lead to unacceptably high residues or crop damage.

Before calibrating, make sure the sprayer is operating correctly. Never calibrate a boom with chemical in its tank. Ensure that the tank is half filled with clean water.

Spray units should be calibrated:

- every season
- whenever application or chemical rates change
- whenever nozzles are changed
- at 50% of anticipated life of nozzles.

The travel speed used in calculating the calibration should match the usual operating methods and conditions. These include the usual gear, engine revolutions, slope and surface where spraying will occur.

8.3 Droplet size

Droplet size is very important when managing drift. Use a nozzle or sprayer setting that produces the largest possible droplet size (coarsest spray quality) to reduce the risk of drift without compromising the effectiveness of the chemical.

The following factors can affect droplet size:

- **Nozzle size and type:** increase nozzle size to increase droplet size. Low drift nozzles are also available.
- **Spray pressure:** reduce spray pressure to increase droplet size. Use a larger nozzle for greater application volume rather than increase spray pressure.
- **Evaporation:** evaporation of droplets reduces their size. Droplets evaporate faster in high temperatures and/or low humidity.
- **Spray release height:** the longer spray droplets stay suspended in the air, the greater the potential for evaporation.
- **Chemical formulation:** some adjuvants can reduce droplet size.

Some products will specify a mandatory droplet size that must be achieved. Using a droplet size outside of these specifications is illegal.

8.4 Nozzles

Modern hydraulic nozzles are classified by an ISO system that shows the output of a nozzle by colour. Two different types of nozzles (e.g. flat fan and AI) that are the same colour will have the same nozzle capacity. When used at the same pressure, both will produce the same output (L/min). Only the droplet size may differ.

Droplet size is classified using the system introduced by the British Crop Protection Council (BCPC) and adapted by the American Society of Agricultural and Biological Engineers (ASABE).

Consult your nozzle manufacturer's current catalogue to select the nozzle that will produce the required droplet size stated on the label, or seek advice from your agronomist, consultant or the product's manufacturer (if no droplet size is specified).

Table B: Nozzle colour classification scheme.

Nozzle Capacity	Colour
01	Orange
015	Green
02	Yellow
025	Purple
03	Blue
04	Red
05	Brown
06	Grey
08	White
10	Light Blue

Other spray application systems are also available. You should discuss any specific requirements with the manufacturers.

8.5 Equipment to reduce spray drift

Automatic rate controllers when set up correctly, allow pressure to change relative to the ground speed while maintaining the water rate, increasing the droplet size (reducing the likelihood of drift) when travelling near sensitive areas.

Air-assisted sprayers provide directed air, which blows spray onto the target area and into a crop canopy. The air helps the spray to move against the wind.

Air induction/inclusion (AI) nozzles have a venturi design which draws air into the body of the nozzle, where it is mixed with the spray solution under pressure. The spray pattern is made up of large air-filled coarse droplets, with very few fine droplets that may be prone to drift. The air bubbles in the droplets shatter on impact with the target, providing good coverage.

Direct soil injection systems have sprays attached to tynes, which spray into the soil as the tynes break and lift the soil. No spray drift occurs because spray is confined beneath the soil. Vapour drift is still possible.

Low drift nozzles are very similar to a normal flat fan nozzle. The nozzle contains a plate with a small hole that reduces the energy of spray before it exits the nozzle, making droplets coarser and slower. This reduces the number of fine droplets that are likely to drift.

Standard equipment can be modified to reduce spray drift by using a coarser nozzle, reducing spray pressure, or angling the nozzles forward, so that the boom can be lowered.

Shielded boom sprayers control drift by using a physical barrier to contain the spray cloud, or act as an aerodynamic guide, controlling air flow around the nozzle. The controlled air flow is less turbulent, minimising the volume of droplets being carried away from the target. The air flow can also force droplets down onto the target.

Twin fluid systems inject compressed air into the spray at the nozzle, allowing for independent control of pressure and flow rate. Droplet size can be maintained at a lower volume rate because air pressure (not liquid pressure) is used to atomise the liquid.

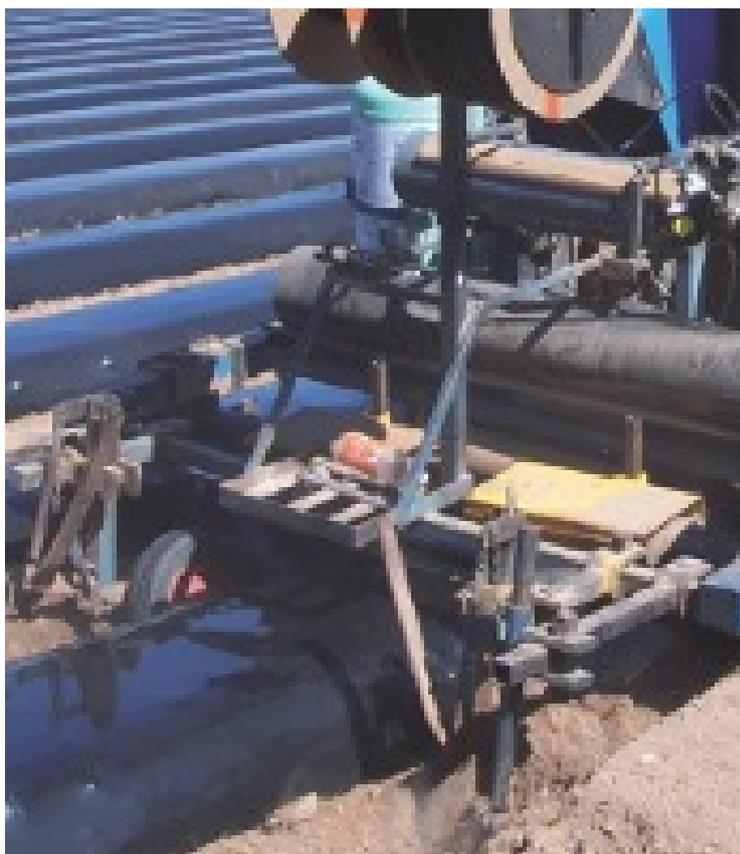
Newer technologies include sensor-fitted equipment that activates nozzles only when they pass over the intended target, and pulsating nozzles that can easily alter droplet size when required.

8.6 Cleaning sprayers after use

Always follow the cleaning and decontamination instructions on the chemical product label. If in doubt, seek advice from the chemical reseller or manufacturer.

If there are no instructions, you should:

- clean the exterior of spray equipment and vehicle (e.g., tractor)
- remove nozzles and flush equipment with clean water (at least 10 L per nozzle), so dirt is rinsed out of lines
- remove, wash, and replace nozzles and filters
- never leave spray chemicals in the spray unit.



Injecting fumigant chemicals into soil pre-sowing



9. WEATHER CONDITIONS

As a chemical user, you have a legal obligation to avoid spray drift damage and to ensure that the chemicals you apply stay within the target area (see 10.1 *Spray drift*).

Before you start, check that the weather conditions are suitable for spraying. Weather conditions can influence the effectiveness of a spray application (e.g. moving spray off-target and injuring non-target species).



Hand-held anemometer

Avoid spraying in the following conditions:

- winds less than 3 km/h and greater than 15 km/h for ground-based application (note that for some products, legally enforceable wind conditions may apply)

- winds that are blowing towards sensitive crops which may be damaged/contaminated by spray drift
- winds that are blowing towards sensitive services (e.g., schools)
- unpredictable sea breezes and other winds caused by heating and cooling of the land throughout the day
- visible dust movement
- inversion layer is present
- still and frosty conditions
- extremely low (dry) or high (humid) relative humidity
- extremely low or high temperatures
- rain is forecast.

Various tools can be used to estimate or measure wind speed and direction:

- anemometers (available as small hand-held electronic meters)
- wind speed charts
- weather stations
- windsocks
- smoke generators.

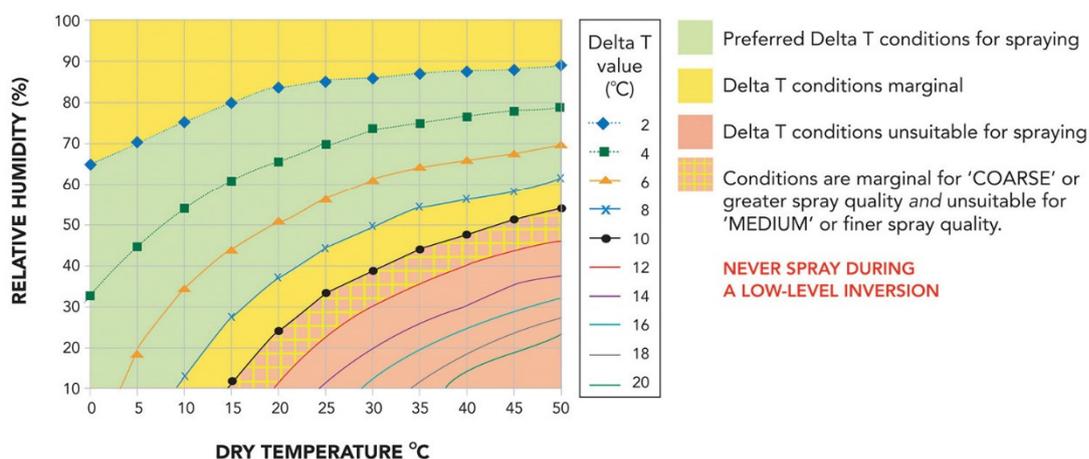
(See 8.5 *Equipment to reduce spray drift*).

Table C, *A guide to estimating wind speeds* is another potentially useful reference tool, but it should only be used as a back-up to a hand-held anemometer.

Delta T (ΔT) is an important indicator of acceptable spraying conditions. It gives an indication of evaporation rate and droplet lifetime. Delta T is calculated by subtracting 'wet bulb' temperature from 'dry bulb' temperature. When applying pesticides, Delta T should ideally be between 2 and 8, and not greater than 10. Select the right Delta T to determine the best weather conditions for spraying.

Monitor weather conditions regularly and be prepared to stop spraying if conditions deteriorate.

SELECTING THE RIGHT DELTA T CONDITIONS FOR SPRAYING



Selecting the right Delta T conditions for spraying (source: Nufarm).

Table C: A guide to estimating wind speeds - For spraying agricultural chemicals

Description	Visible signs	Wind speed (km/h)	Spray drift risk
Calm	Smoke rises vertically, spreads out under inversion layer	0	High Unpredictable vapour and mist drift
Light air	Smoke drifts slowly	1 - 5	Moderate – Low Inversion conditions could still be present
Slight breeze	Wind felt on face, leaves rustle	6 - 11	Low
Gentle breeze/wind	Leaves and small twigs in constant motion	12 - 19	Moderate – High Need to carefully monitor conditions
Moderate wind	Wind raises dust and loose paper; grasses lay over and small branches are moved	20 - 29	High Droplet drift and vapour drift are almost certain, unsuitable for most spraying
Fresh wind	Small trees in leaf begin to sway, crested wavelets for on inland waters	30 - 39	Very high Unsuitable for spraying
Strong wind	Large branches move, whistling heard in wires	45 - 50	Extreme Unsuitable for spraying

Notes: This guide is not intended as a substitute for electric hand-held weather meters, which are available from spray equipment suppliers. Wind speed should be measured at spray application height. Some product labels specify a wind speed range for spraying. Check the product label prior to spraying.

Reduce risk from spray drift		
Ensure wind direction is safe Allow adequate downwind buffer zone	Ensure wind speed is safe Lower boom height Reduce travel speed	Increase droplet size by: increasing nozzle size changing nozzles reducing pump pressure



10. PREVENTING DAMAGE FROM SPRAY OPERATIONS

10.1 Spray drift

Spray drift is the most common cause of off-target chemical movement. As an agricultural chemical user, you must take care to prevent spray drift.

It is an offence to undertake agricultural spraying which:

- injures any plants or stock outside of the target area
- injures any land outside the target area so that growing plants or keeping stock on that land would result in contamination, or
- is likely to contaminate any agricultural produce derived from plants or stock outside the target area.

Various factors can contribute to spray drift, including wind speed and direction, temperature, boom height, droplet size the volatility of the chemical and whether an inversion is present.

It is important to check weather conditions when spraying. If the weather is unstable or unpredictable, or if there is an inversion, don't spray (see 9 *Weather conditions*).

You can also assess the risk of off-target spray drift using *Table D: Risk of off-target movement*. If the risk is high, you should delay spraying until factors have changed, reducing the likelihood of causing off-target spray drift damage.

Table D: Risk of off-target movement

Factor	Potential Drift Hazard Scale		Comment
	High	Low	
Wind speed	Still air or wind greater than 15 km/h	Steady wind (3 -10 km/h)	
Wind direction	Unpredictable or towards sensitive areas	Predictable and away from sensitive areas	
Humidity	Relative humidity (<40%)	Relative humidity (>80%)	Vapour formed and drop size reduction
Delta T (ΔT)	T <2 and >8	ΔT >2 and <8	Avoid spraying when ΔT is <2 or >8
Atmospheric stability	Inversion layer present within 100 m of spray release height	No inversion layer	Do not apply agricultural chemicals when an inversion layer is present
Temperature	High (>28 C)	Low (<15 C)	
Sensitive area	Close (<100 m)	Far (>1 km)	
Buffer zone	None	Distance >100 m	
Vegetative barrier	No vegetation	Live shelter >2x release height, permeability 50%	<i>Casuarina spp.</i> make excellent barriers
Toxicity	S7 chemicals or LD50 dose <200 mg/kg	Chemicals with LD50 dose >5000 mg/kg	
Maximum release height of spray	>1.5 m above target	<0.35 m above target	
Targeting of spray	Directed above target	Directed at target	Frequently a problem in orchards
Droplet size	Fine	Coarse or very coarse	
Travel speed	>20 km/h	<10 km/h, >4 km/h	

Note: A single high-risk category should not necessarily prevent a spray application, particularly when offset by low risk factors (unless the high-risk situation is an inversion layer). When several high-risk conditions apply, the application should be delayed or an alternative sought).

10.2 Label information on managing spray drift

In recent years, product labels have included more directions on managing potential risks caused by spray drift. Spray drift restraint statements are detailed on product labels under the heading 'Spray drift restraints' (see *Example label excerpt*). Mandatory label statements include requirements such as no-spray zones, droplet size requirements, wind speed limits and information about prohibiting spraying during temperature inversion conditions. It is a legal requirement for users to comply with mandatory statements detailed on the product label.

Further information on APVMA's spray drift policy framework, *APVMA Operating Principles In Relation To Spray Drift Risk* and label requirements is available from the APVMA website, www.apvma.gov.au.

Further information on the APVMA's regulatory approach to spray drift is available at www.apvma.gov.au.

10.3 Buffer zones and vegetative barriers

Buffer zones and vegetative barriers can be valuable in reducing the potential for spray drift when applying agricultural chemicals.

A **buffer zone** is an area around a sensitive area in which agricultural chemicals should not be applied. Having a buffer zone allows spray drift to settle out of the air stream as it travels across the buffer zone before reaching the sensitive area. Before undertaking spraying, you should assess the risks and calculate an appropriate buffer zone, as the size needed will vary from paddock to paddock and from year to year. Alternatively, some labels specify a mandatory buffer zone that must be applied if the wind is blowing in the direction of a sensitive sites (see *10.2 Label information on managing spray drift*).

A **vegetative barrier** refers to a row of trees, shrubs or tall grasses planted in strategic lines to reduce the extent of spray drift. These barriers are effective in reducing spray drift by filtering out spray droplets from the air as it passes through their foliage. A vegetative barrier will not reduce vapour drift or odours associated with spray drift.

A good vegetative buffer should be:

- taller than the target plants or the spray unit used for chemical application
- made up of trees or other plants with foliage that allows sufficient air movement (50% porosity)

- made up of plants with long, thin, rough foliage, which is particularly suitable as a vegetative barrier.

Examples of suitable plants include:

- casuarina or sheoak (*Allocasuarina spp.*)
- hybrid willows (evergreen only)
- rye corn
- sorghum
- bottlebrush (*Callistemon spp.*)
- tea tree (*Leptospermum spp.*)

Vegetative buffers are desirable:

- along crop or property boundaries
- next to sensitive areas e.g., susceptible crops, residential areas, hospitals etc.
- along sprinkler rows, bordering waterways
- between blocks or paddocks.



Vegetative buffer adjacent to a vineyard

DIRECTIONS FOR USE

RESTRAINTS

DO NOT apply with aircraft

DO NOT xxxxxxxxxxxx

SPRAY DRIFT RESTRAINTS

DO NOT apply with spray droplets smaller than a COARSE spray droplet size category according to “APVMA Compliance Instructions for Mandatory COARSE or Larger Droplet Size Categories” located under this title in the GENERAL INSTRUCTIONS section of this label.

DO NOT apply when wind speed is less than 3 or more than 15 kilometres per hour as measured at the application site.

DO NOT apply during surface temperature inversion conditions at the application site.

Users of this product **MUST** make an accurate written record of the details of each spray application within 24 hours following application and **KEEP** this record for a minimum of 2 years. The spray application details that must be recorded are: 1 date with start and finish times of application; 2 location address and paddock/s sprayed; 3 full name of this product; 4 amount of product used per hectare and number of hectares applied to; 5 crop/situation and weed/pest; 6 wind speed and direction during application; 7 air temperature and relative humidity during application; 8 nozzle brand, type, spray angle, nozzle capacity and spray system pressure measured during application; 9 name and address of person applying this product. (Additional record details may be required by the state or territory where this product is used.)

MANDATORY NO-SPRAY ZONES

DO NOT apply within 2 km of potentially sensitive or susceptible aquatic areas, townsites or non-target vegetation. The latter includes commercial seedling and plant nurseries, horticultural crops, grapevines, tomato crops, intensive agricultural operations and wildflower processing crops, national parks, nature reserves and aquaculture operations

Example label excerpt (source: APVMA)

10.4 Run-off

Off-target movement of agricultural chemicals can also be caused by run-off.

To avoid run-off:

- store chemicals carefully to prevent leakage
- decant chemicals carefully to prevent spillage
- locate chemical mixing and wash-down sites away from streams, drains and bores
- avoid back-siphoning chemicals when filling tanks
- dispose chemicals appropriately (see 7.4 *Disposal*)
- provide spray employees/contractors with a farm plan that shows waterways
- observe any 'DO NOT...' statements on the label relating to spraying in wet or waterlogged soils
- direct nozzles or handguns away from water when treating weeds on a bank
- establish vegetative buffers between crops and waterways
- cultivate across slopes
- use the right water rate for the soil type
- do not spray when rain is expected
- avoid over-irrigating after applying chemicals
- constantly monitor weather conditions while spraying is taking place
- ensure that application equipment is correctly calibrated.



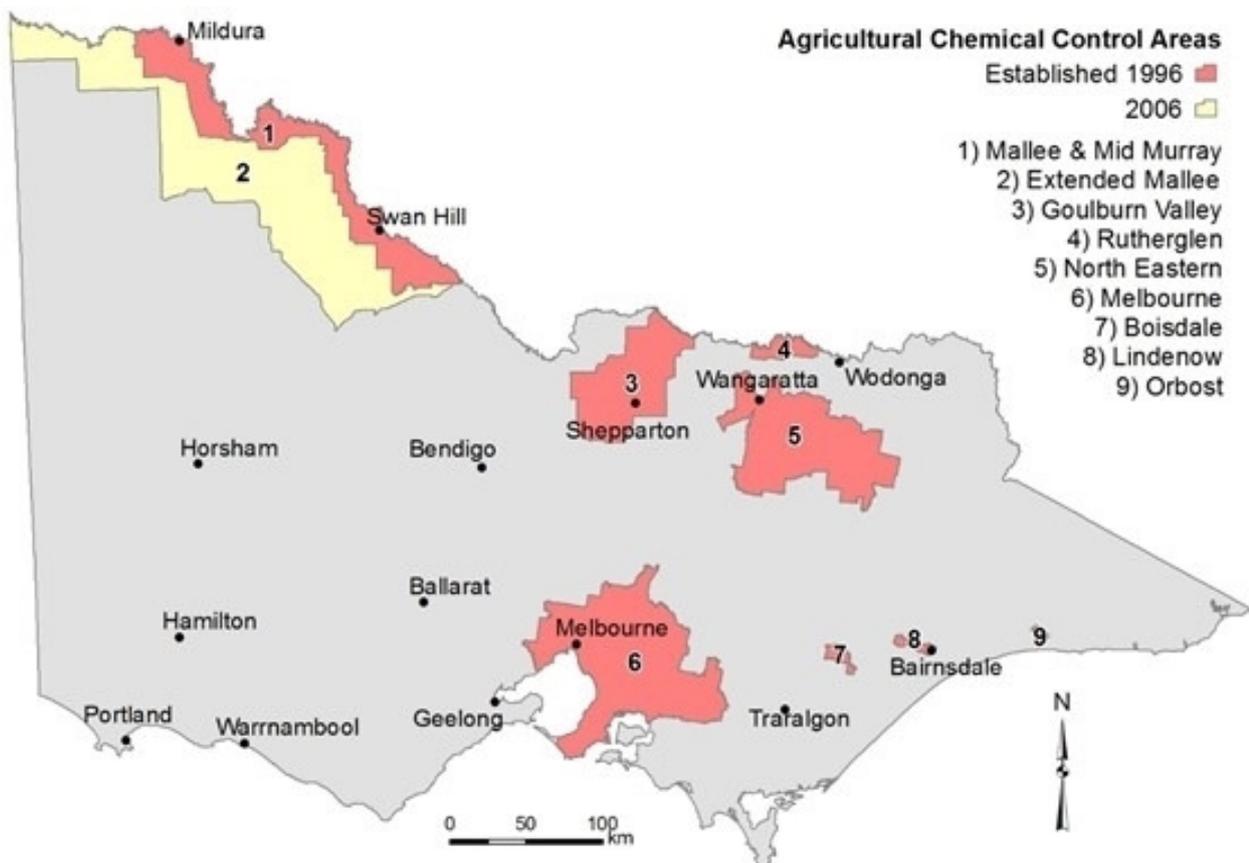
Chemical run-off into pasture paddock

10.5 Agricultural Chemical Control Areas (ACCAs)

Nine Agricultural Chemical Control Areas (ACCAs) have been established in Victoria to protect herbicide-sensitive and high-value crops such as grapevines, vegetables, and fruit trees from damage. The types of herbicides, their methods of application and the periods in which certain chemicals can be applied are restricted in ACCAs (see *Table E: Dates ACCA restrictions are operational* and *Table F: Chemicals prohibited by the specified method of application*).



The use of certain chemicals within an ACCA is prohibited unless Agriculture Victoria has issued a permit authorising their use (see *Table G: Chemicals prohibited unless a permit has been granted by the department Agriculture Victoria*).



Victoria's Agricultural Chemical Control Areas

Table E: Dates ACCA restrictions are operational

Melbourne	All Year
Lindenow	All Year
Orbost	All Year
Boisdale	All Year
Mallee and Mid-Murray	1 August – 30 April the following year
Extended Mallee	1 August – 30 April the following year
Goulburn Valley	1 September – 30 April the following year
North-Eastern	1 September – 30 April the following year
Rutherglen	1 September – 30 April the following year

Table F: Chemicals prohibited by the specified method of application

ACCA	Chemical	Prohibited method
All ACCAs - except for Extended Mallee	Any formulation of Picloram Hexazinone applied as a liquid Products containing Sulfometuron Methyl Ester formulations of Triclopyr	Aerial spraying or mister application
All ACCAs - except for Extended Mallee	Ester formulations of 2,4-D, 2,4-DB or MCPA	All methods of application
Extended Mallee only	Ester formulations of Triclopyr	Aerial spraying or mister application
Extended Mallee only	Ester formulations of 2,4-D or MCPA	All methods of application

Detailed ACCA maps and an application form for a permit to carry out specified spraying in an ACCA can be downloaded from the Agriculture Victoria website at www.agriculture.vic.gov.au/chemicaluse under 'Agricultural Chemical Control Areas and permits' and 'Notification requirements.'

Table G: Chemicals prohibited unless a permit has been granted by Agriculture Victoria

ACCA	Chemical	Prohibited method
All ACCAs - except for Extended Mallee	Any formulation of chlorsulfuron, clopyralid, glyphosate or metsulfuron methyl Any amine formulation of MCPA, MCPB, 2,4-D, 2,4-DB, dicamba, mecoprop or triclopyr	Aerial spraying or mister application



11. RECORD KEEPING

Chemical users must make an accurate written record of their chemical use.

The following records must be made within 48 hours of using an agricultural chemical product and kept for a period of two years from the date of use (see *Table H: Record keeping requirements*).

If you use a household or home garden product that is applied by hand or via a hand-operated device, you are exempt from these requirements. You are also exempt if you use any agricultural chemical products to clean a swimming pool or spa. Likewise, if you are licensed to use agricultural chemical products under Part 7, Division 2 of the *Public Health and Wellbeing Act 2008* and use these products in grounds associated with a building that is not connected with primary production or agricultural commodities, you are also exempt.

Table H: Agricultural chemical record-keeping requirements

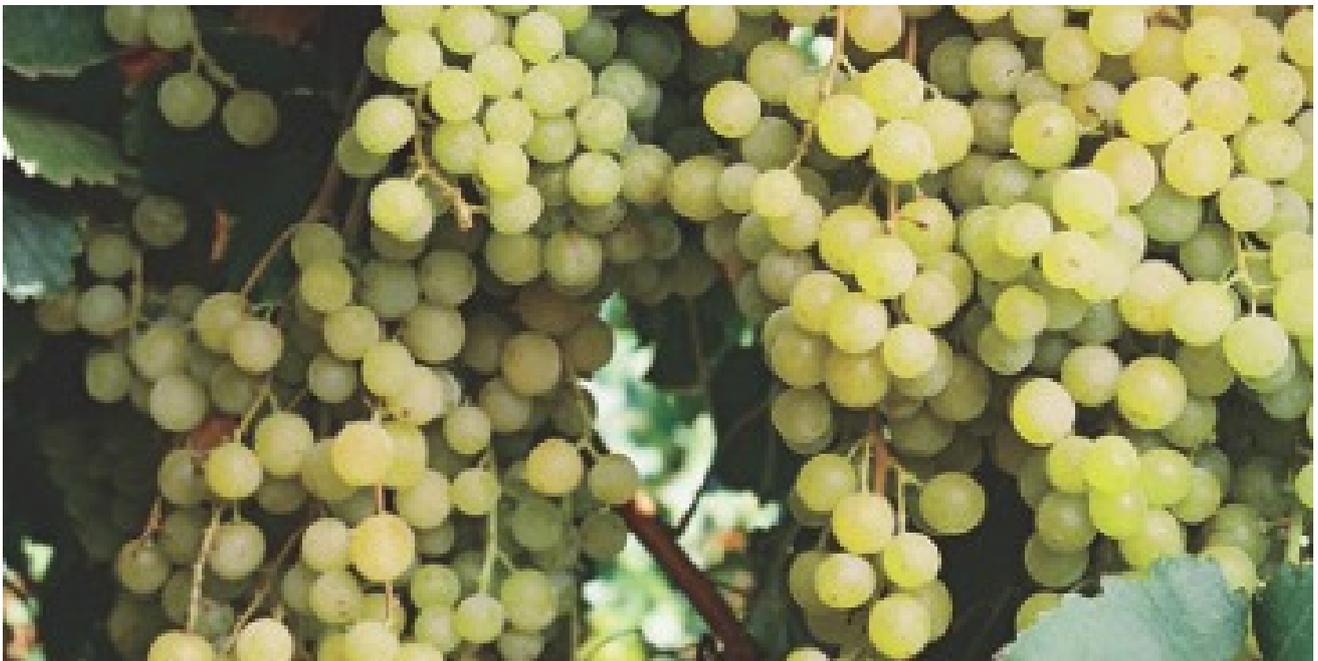
1.	Product trade name
2.	Date the product was used
3.	Application rate of the product, or sufficient information to allow it to be calculated
4.	Crop/commodity that was treated, or the situation in which the product was applied
5.	Specific location where the product was used
6.	Wind speed and direction at the time of application (if spraying outdoors)
7.	Name and contact details of the applicator
8.	Name and contact details of the supervisor (if applicable)
9.	Name and contact details of the person for whom the application was carried out (if applicable)

Sample record-keeping templates for recording the use of agricultural chemicals, poison baits and veterinary chemicals are available at www.agriculture.vic.gov.au/chemicals under 'Application forms'.

You may keep your records in a format that suits you (e.g. handwritten or part of a quality assurance system) providing they contain the information listed in Table H are clear, accurate and made available to an authorised officer upon request.

Records may be made by a third party (e.g. a supervisor or assistant) or via automated data logging, but the chemical user is responsible for ensuring they are accurate and are kept for the required two years.

Other record keeping requirements apply for veterinary chemicals and poison baits.



Wine grapes growing in Rutherglen ACCA



12. SAFETY

WorkSafe Victoria administers occupational health and safety laws that apply to all Victorian workplaces, including farms.

As a land manager or employer, you have a legal responsibility to provide a safe working environment.

Safety standards must be maintained according to the *Occupational Health and Safety Act 2004* and associated regulations. Under these regulations, you must identify any hazards and implement systems to control them and protect workers and other people on-site.

For information, contact WorkSafe Victoria.

12.1 Information about chemicals

Product labels and safety data sheets (SDS) both provide information about the chemical product, its contents, health hazards, safe use and handling instructions, personal protective equipment (PPE) and first aid. SDSs are available from chemical resellers and manufacturers and must be made available to employees and contractors who may be exposed to the chemical during handling, storage, or use.

It is important that you and your workers read and follow directions on the product label and SDS before preparing or using a chemical.

12.2 Personal Protective Equipment (PPE)

Always wear personal protective equipment when working with agricultural chemicals. Chemical product labels and SDS will specify what PPE is required when using the product.

As a land manager or employer, you must provide PPE that meets Australian Standards (AS) (see *Table 1: Australian Standards applicable to PPE*)

and ensure that it is used and cleaned and maintained.

12.2.1 Protective clothing

Chemical labels outline what PPE and protective clothing is required when using the chemical product. Always wear what the label recommends.

As a minimum, you should wear the following protective clothing whenever handling chemicals:

- washable or disposable overalls
- washable hat
- rubber or PVC gloves
- rubber boots.

If you are handling concentrated chemicals, you should also wear:

- PVC apron
- face shield.

Personal protective equipment should be checked and cleaned after each use. Wash PPE separately from household laundry. If any clothing is heavily contaminated by concentrated chemicals, it must be disposed of safely.

Damaged PPE should be immediately replaced.

12.3 Re-entry periods

The re-entry period is the minimum period of time which must pass after the application of a chemical product before people can re-enter the treated area, unless they are wearing the same PPE recommended for application. Re-entry periods can be confused with WHPs. Remember that a re-entry period is about protecting the safety of anyone re-entering the treated area, while a WHP is designed to limit chemical residues in produce.

It is important to observe any re-entry periods specified on the chemical product label.

12.4 Precautions

Always take these precautions when using agricultural chemicals.

- Do not allow others, including children, to be where chemicals are being mixed or applied.
- Never eat, drink, or smoke when using agricultural chemicals.
- Avoid chemicals touching your skin, eyes, or mouth.
- Immediately wash your hands or any skin that is exposed to chemicals.
- Do not use your mouth to clear blocked nozzles or suck the end of a hose to begin siphoning.
- Never store agricultural chemicals in non-original containers or in drink bottles, whether they are labelled or not.

- Use equipment that minimises contact with chemicals (e.g., metering pumps, self-cleaning filters, and electronic spray controllers).
- Stop work and seek medical attention if you feel ill or show symptoms of poisoning.
- Keep spray downwind of the operator. If this is not possible, wear a respirator and hood in addition to PPE.

Follow these precautions in tractor cabins:

- Do not take any contaminated clothing or equipment into the cabin.
- Only use approved chemical filters.
- Change filters regularly according to manufacturer specifications.
- If a tractor cabin has no appropriate chemical filters and does not provide protection from chemical vapour, wear PPE as advised by the label.

Table I: Australian Standards applicable to PPE

PPE	Australian Standards
Eye protection	<i>AS/NZS 1337: Personal eye protection - Eye and face protectors for occupational applications</i> <i>AS/NZS 1336: Eye and face protection - Guidelines</i>
Gloves, aprons, and other equipment	<i>AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance</i>
Respirator	<i>AS/NZS 1716: Respiratory protective devices</i> <i>AS/NZS 1715: Selection, use and maintenance of respiratory protective equipment</i>
Footwear	<i>AS/NZS 2210: Safety, protective and occupational footwear - Guide to selection, care, and use</i>



13. EMERGENCY SITUATIONS

Planning for emergency situations is essential. Emergency procedures should cover chemical leaks and spills, fires, and poisoning, as well as clean-up operations. Consult the SDS for information on first aid, firefighting equipment, and the chemical's compatibility with water.

13.1 Spills

Spill equipment, such as soil, sand, or vermiculite, should be kept at mixing and storage facilities and used to clean up any chemical spills that occur.

When cleaning up spills, you should:

- remove non-essential people from the spillage scene
- wear full PPE as recommended on the label
- move a leaking container to another location to minimise the spill, or decant contents to another container and label properly
- use sand or soil to prevent the chemical spreading
- absorb liquid spills with sand or vermiculite, never use sawdust, as it can react with some chemicals and spontaneously combust
- follow label cleaning instructions to clean the area
- dispose of all contaminated materials following EPA guidelines.

For major spills, call the Country Fire Authority (CFA) on '000' for help.

If anyone is injured by a chemical spill and needs medical attention or has been exposed to an OH&S risk due to a spill, the spill must be reported to WorkSafe Victoria.

13.2 Fire

As part of your emergency planning, it is a good idea to regularly practise fire drills and check all fire equipment to ensure it is in good condition and ready for use. A dry chemical powder fire extinguisher should be kept in the chemical storage location.

Chemicals should be stored separately from fuel and away from residential areas and livestock.

In the event of a fire, you should:

- raise the alarm
- obtain expert help – call the CFA and advise them about the types of chemicals stored
- move all people upwind (evacuate from downwind)
- once the fire is out, treat the situation as a spill.



Triple nozzle system on a boom

13.3 Poisoning

Poisons Information Centre Phone 13 11 26.

Phone '000' in some rural exchange areas

The Poisons Information Centre is a 24-hour, 7 days a week service.

Follow first aid instructions on the chemical label and SDS. Seek advice also from the Poisons Information Centre or a doctor.

Remember the following:

- Avoid getting contaminated yourself – you are no use to anyone if you also become a casualty.
- If the victim has collapsed, stopped breathing, has a seizure (fitting) or is suffering from an anaphylactic (severe allergic) reaction, phone 000 for an ambulance immediately.
- If it is safe to do so remove the cause of contamination from the casualty by washing and removing contaminated clothing.
- If someone is affected by chemical vapour and it is safe to do so, move the person to a well-ventilated area.
- Keep a fully stocked first aid kit available at all times. Include the items recommended on chemical product labels.

If medical treatment is required for anyone, you must notify WorkSafe Victoria.

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