

A GUIDE FOR
**MACHINERY
HYGIENE**
FOR CIVIL
CONSTRUCTION



**CIVIL CONTRACTORS
FEDERATION**

A GUIDE FOR **MACHINERY HYGIENE** FOR CIVIL CONSTRUCTION

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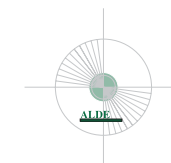
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The Civil Contractors Federation (CCF), Association of Land Development Engineers (ALDE), VicRoads, The Department of Sustainability and Environment (DSE) and The Department of Primary Industries (DPI) are pleased to provide this resource for general use.

Invasive plants (weeds) and plant diseases are a serious threat to our community, agriculture and environment. Weeds cost Australians in excess of \$4 billion every year, and this is before considering the costs to natural assets and environment.

Weed Impact of Civil Construction

The civil construction industry has an important role to play in Victoria by preventing the introduction and spread of invasive plants. Plant parts, seeds and soil remaining on machinery and other equipment can spread to new areas and can impact on the community, the environment and agricultural systems.

Contractors can help to control the damage caused by invasive plants by applying effective machinery hygiene methods. In this way, the risk of incurring penalties under the *Catchment and Land Protection Act 1994* (CaLP Act) will be reduced and contractor reputation is enhanced by doing the right thing.

Purpose of this Booklet

This guide aims to provide information about plant disease and invasive plant management relevant to the civil contracting industry. The guide also recommends methods for detecting and removing contaminant plant parts, seeds and soil from machinery. This resource is suitable for use by contractors, engineers, municipal councils and State authorities. Contractors are encouraged to also use the CCF web learning tool available at www.civilcontractors.com/

The contents in this booklet will be reviewed biennially for compliance to relevant legislation and best practice methods.



A weed is commonly described as any undesirable or troublesome plant, especially one that grows where it is not wanted. The Victorian *Catchment and Land Protection Act 1994* (CaLP Act) also refers to those species which are declared noxious weeds.

Victorian Declared Noxious Weeds

A declared noxious weed is a plant species proclaimed by the Victorian Government under the CaLP Act, to be harmful to the State's primary industries or biodiversity or human health or that has the potential to cause such harm.

Under the CaLP Act declared (noxious) weeds must not be, transported or deposited onto land, this includes the seeds of a noxious weed that may be in soil or on a vehicle. There are four categories of declared noxious weeds: State prohibited weeds, Regionally prohibited weeds, Regionally controlled weeds and Restricted weeds.

To identify declared noxious weeds in a Catchment area and their weed classification definitions go to www.dpi.vic.gov.au/agriculture/pests-diseases-and-weeds/weeds/invasive-plants, or alternatively contact the DPI/DSE Customer Service Centre on 136 186.

Non-Declared Weeds

Non-declared weed species are not listed under Victorian legislation; however, they are invasive plants that impact on the community, the environment and agriculture systems. It is appropriate to manage non-declared weeds with machinery hygiene and other control measures.

Plant Diseases

Plant diseases (sometimes referred to as pathogens) are living microorganisms such as a bacterium or fungi that cause diseases in native plants as well as agricultural crops. Examples of these are cinnamon

fungus, phytophthora (root rot) and phylloxera all of which affect native and agricultural plants.

Plant diseases spread more readily in wet and muddy conditions. Machinery hygiene decontamination practices for plant disease include spraying the machine with a fungicide or bleach after the cleaning process. Phytoclean® is the only registered disinfectant for the control of *phytophthora cinnamomi* at the date of this publication.

Contact the DPI/DSE Customer Service Centre on 136 186 for further advice about managing plant pathogens and treatment methods.

The Ways that Weeds Spread

There are many ways that weeds may spread, with the most common being via water, wind and human activities.

Weed seeds are small and can easily lodge within the mechanical structures of machines. Seeds can lay dormant in the soil for many years and are nearly impossible to detect until they start to grow.

Seeds and plant parts can also be contaminants of soil or gravel introduced and removed from the work area.

The civil construction industry has the potential to spread weed seeds and plant parts capable of growing, via the movement of contaminated vehicles, equipment and goods. Civil construction activities often involve working in direct contact with soil, and are therefore at a higher risk of weed contamination than many other industries.

Weed Identification

The following web resources are available to help you identify weeds:

- www.dpi.vic.gov.au/weeds
- www.weeds.org.au

Guide booklets with information about invasive plants are available from local councils and DPI.



Your obligations to prevent the spread of declared noxious weeds are stated in the *Catchment and Land Protection Act 1994* (CaLP Act).

The Catchment and Land Protection Act 1994

Section 70A of the CaLP Act states, when moving vehicles or other things on to or from a road, all reasonable precaution must be taken to ensure the vehicle or equipment is free from the seeds of noxious weeds or any other plant parts capable of growing. **This also includes moving or transporting:**

- 1a)** Hay, grain, stone, gravel, soil, plant material, fodder or livestock
- 1b)** Machinery or equipment used for:
 - building or maintaining a road or roadside; or
 - building or maintaining electricity, gas, water, telecommunications or rail infrastructure; or
 - the purpose of primary production or earthworks.
- 2)** Machinery, implements or other equipment from land on to or from a road.

Section 71 identifies that **without a permit from the Secretary a person must not:**

- b)** Transport within Victoria, or willfully bring or cause to be brought into Victoria a noxious weed, the seeds of, or any part of, a noxious weed that is capable of growing.
- c)** Sell, remove or cause to be removed, soil, sand, gravel or stone which contains or is likely to contain any part of a noxious weed, or which comes from land on which noxious weeds grow.

- e)** Sell or hire, or offer for hire, a substance or machinery that is used or intended to be used in primary production and which contains the seeds or any other part of a noxious weed that is capable of growing.
- h)** Deposit on land a noxious weed or the seeds of a noxious weed that are apparently capable of germinating.

Failure to comply with these provisions of the legislation could result in prosecution and fines up to 120 penalty units for each offence.

Permits

Under the CaLP Act, DPI can issue a permit, for the transport of soil, sand gravel or stone containing **declared noxious weeds**. Permits are considered on a case-by-case basis. **A permit will not be required where weeds are managed on site by controls such as:**

- machinery hygiene
- site assessments (prior to works occurring)
- pre-planned jobs which minimise weed spread
- destroying weeds on site - For example, mulching weeds and burying them in an on-site trench or similar.

For more information on permits, please contact DPI/DSE Customer Service Centre on 136 186.

Working Interstate

If you are working across the state borders contact the appropriate authority for regulations that apply in that area. You can avoid transporting new invasive plants into or out of Victoria by implementing sound management practices.

If you are working near the Victorian border you can contact DPI/DSE Customer Service Centre on 136 186 for further information on invasive plants that are prohibited in our State.



Prevention is the most effective way to manage weeds and simple planning measures can reduce the cost and time of weed management for construction projects.

Before starting construction, consider the following:

- Conduct a site assessment and determine if there are noxious weeds or plant diseases present. Consult with people who are familiar with the area such as agronomists, land managers or local authorities or contact the DPI/DSE Customer Service Centre on 136 186.
- Locate areas of weed infestation and areas of ecological significance on your site map and fence off where necessary.
- Chemically treat or manually remove weeds before commencing work, where appropriate.
- Plan the disposal method to be used. Declared weeds may be buried on site or disposed off site with a permit from DPI.
- Locate suitable clean down areas, usually near entry and exit points, and identify these on your site map.
- If possible, plan works to progress from clean areas to infested areas (particularly when working on roadsides).
- Aim to minimise disturbance of existing vegetation.
- Be trained in the identification of noxious weeds and how they spread.
- Enroll in the WeedStop Training program offered by DPI or use the **CCF Machinery Hygiene web based e-learning resource**.



Tendering

Before submitting a quote or tender, ask for a site-specific weed and plant disease assessment. This assessment will indicate the species of weed and disease present and where they are located in the work area. If a weed and plant disease assessment is not available, then it may be appropriate to include this in your tender submission.

Where the construction project is in a weed-infested area, allow for weed management costs in quotes or tenders.

Weed Management on Site

Simple management measures can prevent the spread of invasive plants and reduce the frequency of cleaning. **Some measures to prevent the spread of weeds and plant diseases include:**

- Implement procedures to inspect and/or clean machinery entering and leaving the site.
- Establish and monitor entry and exit points, for weeds on vehicles and machinery.
- Ensure everyone on site is familiar with machinery hygiene and cleaning procedures by use of site inductions and training.
- Avoid the movement of people and machinery through infested areas particularly at the high risk time of seeding.
- Use removable screens over grills on vehicles to prevent seeds lodging in internal parts such as the radiator.
- Remove weeds from soil before stockpiling.
- Seek a declaration from suppliers that soil and machinery received to site is weed and disease free (especially for re-vegetation works).
- Seek a permit from DPI (136 186) when planning to transport declared noxious weeds or infested soil or material off site.



An inspection will help you determine if your vehicle or machine requires cleaning. Inspections can also save time by helping you to identify and clean only the infested areas of machines.

VEHICLE INSPECTIONS

Depending on the severity of the site weed infestation, inspections may need to be conducted on all vehicles entering and exiting the site. Accredited training to inspect machinery for plant and soil material is provided in the WeedStop Training program.

Inspections will reveal whether or not procedures are being followed for machinery cleaning. Further training and awareness information will be required where there is non-compliance to procedures.

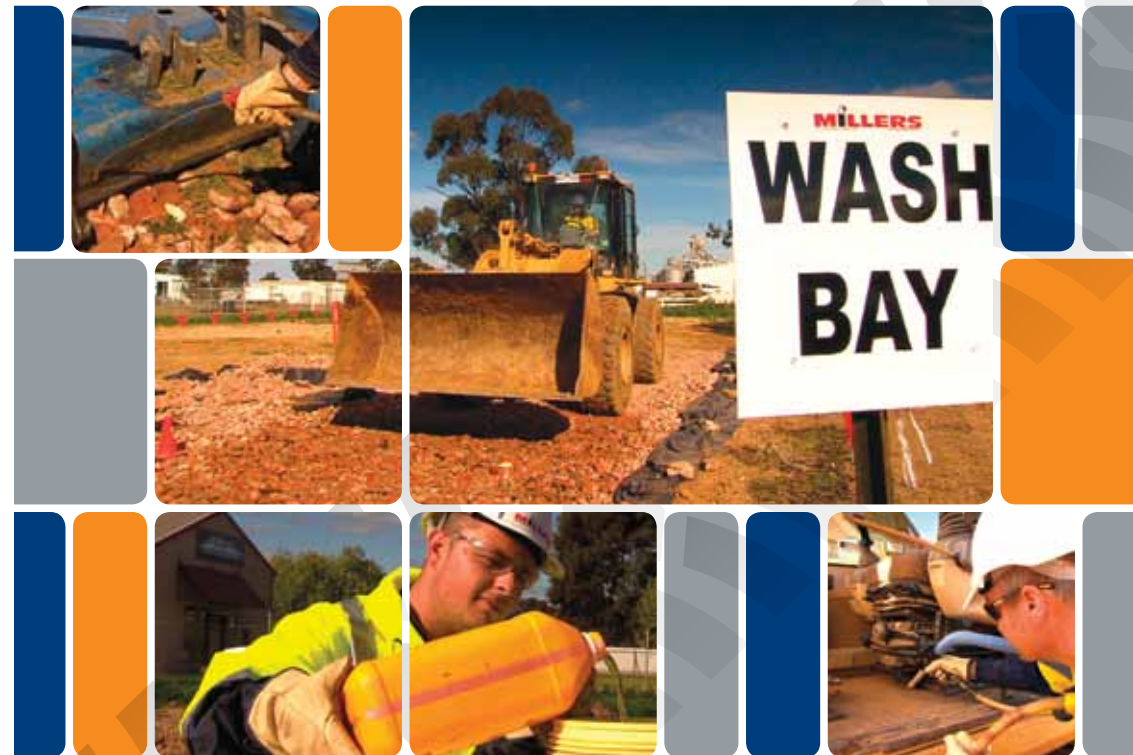
Tools you may need for vehicle inspection include:

- mirrors
- tools to remove covers or guards
- torch
- probe or rod
- wire
- safety glasses
- gloves
- tray for potentially contaminated material
- books or identification guides
- checklist of critical inspection point
- Vehicle and Machinery Hygiene Record, available of the CCF website, www.civilcontractors.com/

Safety

Before you inspect or clean vehicles and machinery, you should complete a safe work method statement. Immobilise vehicles by applying the parking brake and chocking the wheels where applicable. Remove ignition keys. Lower implements to the ground and secure hatches. Wear your personal protective equipment.

CLEANING MACHINERY



Accredited training to clean machinery of plant and soil material is provided in the DPI Weed Stop Training program.

Cleaning should occur:

- after working in an area affected by weeds or plant pathogens
- before moving machinery between worksites or properties
- before moving machines from a local area of operation
- before moving machinery that is infested or likely to be infested with weed seeds or plant pathogens
- before and after using machinery along roadsides, riverbanks, controlled access tracks or in remote areas

Keep a record of your cleaning operations in a logbook or use the Vehicle and Machinery Hygiene Record available on the CCF website.

Cleaning Areas

Where possible, locate cleaning areas close to the site entry and exit points or infested areas.

Waste collected from cleaning areas must be managed on site or seek a permit from DPI (136 186) to transport weed infested soil or material off site. Where material is to remain on site, burying may be an appropriate treatment.

Care should be taken to prevent discharge off site to waterways and drainage as large penalties may apply. A buffer of 30 metres to waterways and drainage lines is desirable.

Cleaning areas should be:

- included on your site plan
- fit for purpose and engineered where required
- mud free; boggy sites can lead to machinery being re-contaminated
- clear of waterways and drainage lines
- on level ground to reduce runoff
- free of contamination from fuels oils and grease from vehicles

Cleaning and Disinfection Methods

The cleaning and disinfection method chosen will depend on the site conditions, the type of work undertaken and sometimes the species of invasive plants present at the site. In some cases it can be most effective to use a combination of methods. **Some effective cleaning methods include:**

- **physical removal** – done prior to and at the completion of cleaning
- **washing** – high-pressure water or a garden hose
- **air blasting** – suitable for dry dusty machines but not caked on mud
- **steam cleaning** – in some cases this method may kill seeds or plant diseases/pathogens
- **vacuuming** – useful in removing matter from the interior
- **disinfection with a pressure pump spray** – used after cleaning to kill plant diseases and fungus.

CLEANING MACHINERY

HYGIENE ROLL CALL FOR YOUR MACHINE

Tips for a Quick Hygienic and Clean Job

To get the job done fast and hygienically, the following tips will ensure that you clean all parts of your machine and avoid re-contamination:

- Inspect the machine to determine where cleaning is necessary.
- Use clean water without chemicals and soaps.
- Leave space to maneuver during cleaning.
- Wash waste away from vehicles.
- Do not drive through wash residue.
- Disinfect the entire machine using an appropriate chemical which could be bleach or a fungicide such as phytoclean®.

Documentation and Weed Management Tools

Weed site assessments, Vehicle and Machinery Hygiene Records and weed free declarations are valuable documents.

Weed and machinery hygiene documentation will demonstrate to your clients and to regulatory bodies that you are meeting your compliance obligations. Also, if you need to prove that you have not introduced weeds to an area, your management records may be worth their weight in gold!

The CCF Vehicle and Machinery Hygiene record is available online (www.civilcontractors.com/).

Contractors can help to control the damage caused by invasive plants by applying effective machinery hygiene methods.



HYGIENE ROLL CALL FOR YOUR MACHINE

Cabin

- carpets
- mats
- foot wells
- pedals
- controls
- seats
- air conditioner filter
- external surrounds



Underside, and other Parts

- guards and belly plates
- chassis rails and brackets
- recesses
- the swing drive area
- around counter weight
- around the fuel tank
- axle housing
- ledges gaps or crevices
- in the body including
- damaged areas where
- dirt may lodge



HYGIENE ROLL CALL FOR YOUR MACHINE

HYGIENE ROLL CALL FOR YOUR MACHINE

Track Area

- shoe
- links
- sprockets
- idler wheels
- track adjuster guards
- lubrication points
- inside the track area



HYGIENE ROLL CALL FOR YOUR MACHINE

Wheels & Steering

- treads
- outside and inside rims
- wheel arches
- mud flaps
- brackets and brake
- steering components



HYGIENE ROLL CALL FOR YOUR MACHINE

Blades & Buckets

front and back of the cutting edge

teeth

pivot points & trunnions

turning circle

hydraulic rods

inside and back of the bucket

hydraulic hoses

area where the cutting edge is fixed

cutting edge

wear plates

pivot points



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Lights & Accessories

lights

tool box



Arms/Booms

pivot points

hydraulic rods



HYGIENE ROLL CALL FOR YOUR MACHINE

Engine

- chain cases
- plates
- radiator fins and grille
- in between the cooling cores
- engine mounts
- recesses in the engine or manifold
- floor of the engine bay
- air filter
- battery box

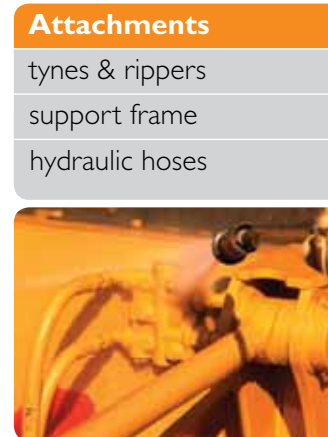


HYGIENE ROLL CALL FOR YOUR MACHINE



Attachments

- tynes & rippers
- support frame
- hydraulic hoses



HYGIENE ROLL CALL FOR YOUR MACHINE

Road Side Slasher

Extra care is needed to ensure a complete job of cleaning is conducted of road side slashers.

Air blasting is suitable in drier conditions or prior to using water

Use high pressure water for more stubborn particles.

top

underside

recesses and crevices



WHAT CIVIL CONTRACTORS SAY



Civil contractors have an important role to play in Victoria by preventing the introduction and spread of invasive plants.

“Abigroup recognises that proactive weed and pathogen management through education and training, the implementation of vehicle hygiene protocols and targeted control techniques are the most effective methods of controlling invasive weeds and plant diseases.

We also understand that no single method or control technique will be solely successful in effectively controlling weeds and plant diseases.

Through proactive onsite management, we aim to reduce the risk of spread and ensure that weeds are out-competed by more desirable native species to assist in protecting Victoria’s biodiversity values.”

Abigroup Contractors

“By having the ability to identify weeds and by following simple and inexpensive machinery hygiene measures, we ensure that we are not contributing to weed and plant disease spread.

Effective weed management can potentially give you an edge over your competitors.”

Anglopac Environmental

“We work closely with our clients and regulatory authorities to ensure that we use the most appropriate methodology to prevent the spread of weeds and plant diseases. Our site-specific construction project management procedures incorporate the flora and fauna reports provided to us by our clients.

We also recognise that onsite training is required to assist staff in weed identification and the hygiene protocols required ensuring a successful outcome.”

Fulton Hogan

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R.G. and F.J. Richardson. *Weeds of the South East*. second ed. 2011. R.G. and F.J. Richardson, Victoria.

Weed Identification Guide for the Victorian Fodder Industry. 2010.
The State of Victoria, Department of Primary Industries, Victoria.

Guide to Roadside Weeds of Victoria. 2007. VicRoads, Victoria.

Environmental Weed Guide. 2011.
CitiPower and Powercor Australia, Victoria.

Websites

www.civilcontractors.com/

www.dpi.vic.gov.au/weeds
(DPI, Invasive Plants and Animals Operation Branch)

www.dse.vic.gov.au/dse/index.htm
(Department of Sustainability and Environment)

www.weeds.org.au (Weeds Australia)

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