Farm HYGIENE
Your Future

Tasmanian

Washdown Guidelines

for Weed and Disease Control

Machinery, Vehicles & Equipment

Edition 1

AGRICULTURAL CONTRACTORS OF TASMANIA

Forestry Tasmania
GROWING OUR FUTURE

Tasmania
DEPARTMENT of PRIMARY INDUSTRIES, WATER and ENVIRONMENT

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Washdown Guidelines
For Weed and Disease Control

Edition 1
April 2004

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REVIEW OF THE GUIDELINES
The Washdown Guidelines will be reviewed in April 2005. Comments on the guidelines may be forwarded to:

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INTRODUCTION

We all have a responsibility not to spread weeds and disease when visiting or working on private or Crown land. In some cases this may be a legal requirement specified under provisions of the *Plant Quarantine Act 1997, Animal Health Act 1995* or as detailed in a Weed Management Plan. In other cases industries may have standard operating procedures or codes of practice governing washdown requirements for weed and disease control.

Weed seed, some insects and plant pathogens may travel almost sight unseen in mud or lodged in nooks and crannies on machinery, vehicles and other equipment. It is easy to overlook the risk of carrying weeds and diseases; the consequences however, are not so subtle. Failure to washdown can result in crop losses or permanent environmental damage, often incurring substantial cost to the land owner or manager. For example, crop-destroying diseases such as onion white rot and club root may be spread in soil adhering to farm machinery, while in the bush, the introduction of *Phytophthora* root rot may reduce the biodiversity of heathlands and potentially lead to the extinction of some plants.

These guidelines establish a standard for washdown and provide a guide to prescribing its application where codes of practice or other environmental management plans are not in place.

Always consult the land owner or manager for any specific washdown requirements and approval to proceed with any washdown procedures outlined in these guidelines.

WHEN TO WASHDOWN

Many industries have, or are developing, standard operating procedures for vehicle and machinery washdown. Consult your industry code of practice or environmental management system for determining the washdown requirements that apply.

Major developments are also subject to environmental management plans that will specify washdown requirements applying to the project.

For other situations, as a general guide washdown is advisable after:

- operating in an area affected by a weed or disease that is under containment
- transporting weeds or soil known to be infected with weed seed or a plant pathogen

or before:

- moving machinery out of a local area of operation
- moving machinery between properties
- moving vehicles or machinery to an island
- using machinery along roadsides or along river banks
- using machinery to transport soil and quarry materials
- using controlled-access vehicle tracks
- visiting remote areas where access is only by boat, helicopter or light plane

EQUIPMENT

Personal and small tool wash equipment

Portable wash baths are recommended for use when travelling in vehicles and helicopters for washing footwear and small tools. Washbaths can be made from a fish box (or other suitably sized plastic box) fitted with an open weave plastic doormat, a scrubbing brush, a pair of safety gloves, glasses, detergent or fungicide, and a container of clean water. For backpacking, a 2 litre bottle, scrubbing brush, safety gloves and glasses can be used for small tools and boot washing.

The fungicide Phytophthora Clean ™ should be added to washbaths to control the spread of *Phytophthora cinnamomi* if:

- sterilising tools used for *P. cinnamomi* sampling
- entering or washing down within a *Phytophthora cinnamomi* management zone
- entering a population of threatened species that is susceptible to *P. cinnamomi*

Portable vehicle wash equipment

Where field wash down is a regular practice facilities should be obtained and carried for the purpose. Large commercial wash units are available, though in many instances small self-assembled systems will be adequate. In industries that use bushfire slip-on units, these are ideal, allowing more flexible choice of washdown sites. Small fire pumps or portable high pressure wash units are suitable. A shovel, crow bar and stiff brush are also required. Farm workshops should also have suitable wash down equipment. Where a blowdown only is required, compressors or portable blower vacs may be used along with a small brush.

Vehicle wash bays

Purpose built wash bays should be used when ever possible. These washdown facilities include effective effluent management systems to protect the environment. Commercial washdown facilities are available for vehicles and small trucks at most large towns.

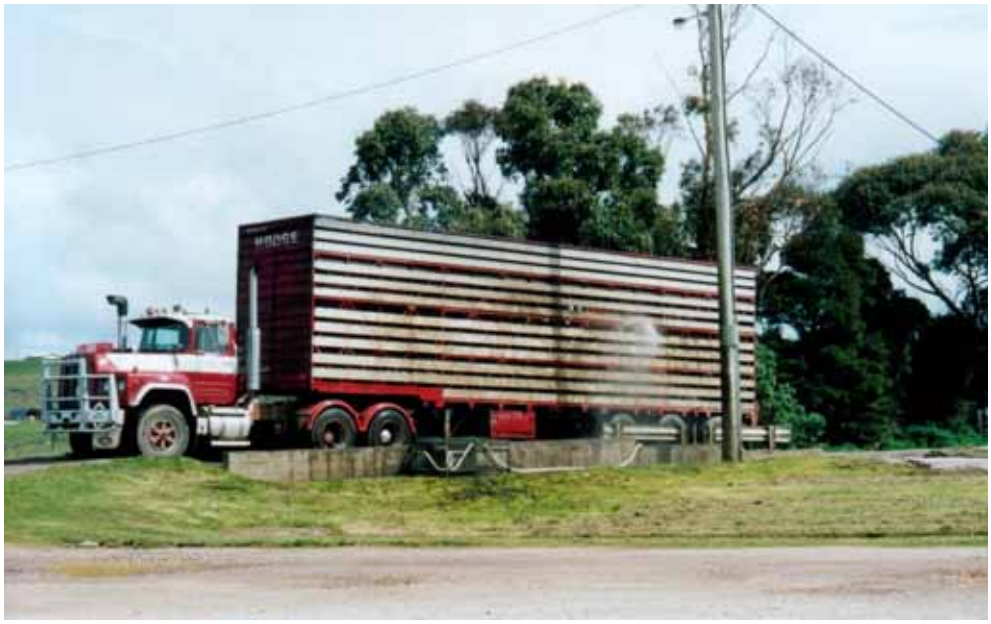

Figure 1 Smithton truckwash in action (Photo: Sue Jennings)

WASHDOWN STANDARDS

General standard

For general cleaning procedures the following standard applies:

- remove only those cover plates etc that can be quickly and easily removed and replaced
- no clods of dirt or loose soil should be present after washdown. Smeared soil stains and soil firmly lodged in difficult to access areas are acceptable
- radiator, grills and the interior of vehicles should be free of accumulations of seed and other plant material

Note that some machinery, such as harvesting equipment, cannot be washed with water because of potential damage to sensitive electronic equipment. Always consult and comply with the manufacturers recommended cleaning method.

Cleaning and inspection should be undertaken in accordance with the general washdown procedure (page 8) and machinery checklists (page 9).

Custom standards

Customised washdown standards may be applied under environmental management plans or job specifications where the control of a serious weed or pathogen is required. For instance, particular disinfectants may need to be applied and greater attention to soil accumulations behind protective plates and covers may be specified. Similarly landholders and managers may wish to apply specific washdown requirements.

PROCEDURES

Small tools & portable washbaths

These are used in the management of *Phytophthora* root-rot in native vegetation or can be established as temporary washdown points to contain the spread of soil by foot traffic in other diseased areas.

1. Site the washbath just outside the infected area or at the departure point for the vehicle or aircraft.
2. Remove all loose mud and dirt from the object to be cleaned.
3. Use the recommended safety equipment if washing with a fungicide (safety gloves and glasses).
4. Part fill the washbath with clean water, a depth of about 4 cms is adequate for boot washing. Mix a solution of detergent or fungicide as required (see page 3).
5. Clean boots, gaiters and equipment with the scrubbing brush.
6. Effluent containing registered products such as fungicides must be disposed of in accordance with label recommendations.
7. A final rinse or wipe with fungicide or methylated spirits can be used for sterilisation of scientific equipment.

Selecting a field washdown site.

Field washdown of may be required to contain weeds or plant pathogens to a particular area or where machinery is moved directly between field sites. Always consult the landholder. In selecting a washdown site, consideration should be given to:

- siting the washdown at the edge, or nearby, any areas where weeds or pathogens need to be contained, choose sites where the land slopes back into an infested area or an adjacent area not susceptible to the problem

- ensuring run-off will not enter any watercourse or waterbody, a buffer of at least 30m is desirable
- avoiding sensitive vegetation or wildlife habitat eg remnant native vegetation and threatened species sites
- selecting mud-free sites (e.g. well grassed, gravel, bark or timber corded) which are gently sloped to drain effluent away from the washdown area
- allow adequate space to move tracked vehicles
- potential hazards, e.g. powerlines

Note that low loaders are not a suitable platform for washing machinery.

Where there will be large quantities of effluent or there is a risk of extensive run-off, the washdown area should be bunded and a sump constructed to safely dispose of the effluent Take particular care where the effluent is likely to be contaminated with oils.

Mark or record washdown sites with the landowner or manager for subsequent monitoring and weed control.

Figure 2 Washing down (Photograph: D. Tucker)

General washdown procedure

Note: Do NOT apply water to harvesters or other equipment that may be damaged by water.

1. Locate washdown site and prepare the surface or construct bunding as required.
2. Safely park the vehicle free of any hazards (e.g. electrical), ensure the engine is off and the vehicle is immobilised.
3. Look over the vehicle, inside and out, for where dirt, plant material including seeds are lodged. Pay attention to the underside, radiators, spare tyres, foot wells and bumper bars.
4. Remove any guards, covers or plates if required being careful of any parts that may cause injury.
5. Knock off large clods of mud, use a crow bar if required and sweep out the cabin.
6. Use a vacuum or compressed air where available for removing dried plant material like weed seeds and chaff in radiators and other small spaces where this material lodges. Brush off dry material if no other facilities are available.
7. Clean down with a high pressure hose and stiff brush/crowbar. Use only freshwater if washing down in the field.
8. Start with the underside of the vehicle, wheel arches, wheels (including spare). Next do the sides, radiator, tray, bumper bars etc and finally upper body. Some vehicles may need to be moved during washdown eg tracked machinery.
9. Clean any associated implements, eg buckets.
10. Check there is no loose soil or plant material that could be readily dislodged or removed.
11. In wash bays, steam treat or rinse off vehicle with clean water.
12. Wash effluent away from vehicle, do not drive through wash effluent.

Machinery checklists

Trucks and vehicles

For small vehicles in the field where washdown facilities can not be provided the minimum requirement is:

all loose and large clods of dirt should be physically knocked off the vehicle at the desired washdown point before driving back to a suitable wash facility.

Systematically inspect and clean, including:

Cabin	floor, mats and under seats
Engine	radiators
	engine bay and grill
Body	hollow channels
	inside bumper bars
	crevices and ledges
	underside
Wheels	inside and outside
	between dual wheels if fitted
	spare wheel
Tray	hollow channels
	chassis

Wheeled machinery (skidders, tractors, loaders etc)

Systematically inspect and clean, including:

Cabin	floor and under seats
Engine	grill, radiator, oil cooler etc
	around sound deadening panels
	engine compartment grill
Body	chassis
	axle housing, hollow sections
	guards
	cab steps
	around fuel tank
	hollow sections in drawbars and retractable/extendable type three point linkages
	general holes, ledges, gaps and crevices in body including damaged boots, cover plates where trash may lodge
Wheels	inside and outside wheels and rims
	spaces between dual wheels
	chains if fitted
Attached equipment	buckets/ blades including teeth and adaptor plates
Hydraulic arms	crevices where trash can lodge

Bulldozers

Systematically inspect and clean, including:

Cabin	floor and under seats
	below transmission coverplates
Engine	radiator, oil cooler etc
	airfilters (for seeds)
	around engine bay
Tracks	lift inspection/coverplates to gain inside access
	idler wheels
	track frame
Body Plates	knock lose material out from belly plates and rear plates as far as is feasible without dismantling
Body	fuel cells
	battery box
Blade	check all hollow sections
	pivot points and adaptors at rear of blade where soil can compact
Tines	crevices where trash can lodge
Ripper	ripper frame support which is usually hollow
	compacted soil underneath ripper points

Excavators

Systematically inspect and clean, including:

Cabin	floor and under seats
Engine	grill, radiator, oil cooler etc
	around engine bay
Tracks	idler wheels
	track frame
	tracks
	removable track adjustor guards and lubrication points
Body Plates	glacier plate near radiator
Body	ledges and channels
Blade	check all hollow sections
	between teeth of adaptors
	wear plates
Booms	crevices
Turret pivot	under and around mechanism

Ground engaging equipment

Ploughs tillage equipment, discs, drills, seeders, posthole diggers, planting and harvesting equipment.

Always consult the landowner or manager on requirements and suitable clean down site.

Remove the bulk of the soil by knocking off and scrapping as far as practical. Depending on the type of contamination, wet or dry, use water or an air compressor.

Systematically inspect and clean, including:

Frame	hollow channels
	chassis crevices and ledges
	bearing housings
Wheels/ tyres	inside and outside
	lifting mechanism
	axles
Mechanism	holding bins
	discs, tines, cutters and shears
	behind safety guards
	conveyors

Fodder and grain production equipment.

(Rakes, headers, windrowers, conditioners, tedders, bailers etc)

Always consult the landowner or manager on requirements and suitable clean down site. Clean down may be required to control variety contamination in addition to weed and disease control. For certified crops clean down prior to leaving each crop and discharge headers 50m into next crop in accordance with the certification guidelines (see Agricultural Contractors of Tasmania Handbook) or the instructions of a Seed Certification Inspector.

Use only compressed air or a large vacuum cleaner. Cleaning with high pressure water could seriously damage harvesting equipment.

1. Blow down the outside of the machine first.
2. Remove or open easily accessed shields and covers and systematically inspect then clean.
3. For harvesters, increase the wind and run the machine at high speed.
4. Complete with a final blow down of the outside after closing covers.

Pay particular attention to:

Body and frame	Hollow channels, ledges and crevices
Cabin	in and under the cabin
Engine	radiator and grill
	around engine bay
Stone trap	if fitted
Mechanisms	elevators, slides, augers, drum and concaves
	gearboxes, pulleys
Headers	straw spreader or choppers
	grain bin, trays
	fan housing, sieves and screens
Bailers	pickup and around bale chamber and knotters area

Note: For certified crops, headers must be comprehensively cleaned which will take ½ to 1 day.

Slashers and mowers.

Slashers are major contributors to roadside weed spread through carriage of seed. Cleaning may be required after passing through significant weed infestations or prior to slashing weed free areas.

When used in dry conditions they are best cleaned by blowing down. An on-board or portable compressor can be used and a stiff broom or shovel may be helpful.

1. Disengage power take off or other cutter power system.
2. Inspect and clean, paying particular attention to:

Linkages	all places seeds may lodge
Body	underside including any sills
	safety chain
	cutters
	topside including any sills
Wheels	inside and outside
Tractor	inspect and blow down or sweep out as per washdown checklist

Water disinfection for *Phytophthora* root rot management

Where water is transported into *Phytophthora* management zones or other areas of native vegetation sensitive to *Phytophthora* root-rot the water should be disinfected to prevent the introduction of *Phytophthora* root-rot. This situation will normally only occur during fire fighting operations where water is drawn from a different catchment.

Disinfection of water is most easily undertaken using granulated pool chlorine products. Handle in accordance with the manufacturer's safety instructions and mix at a rate of:

6ml (0.05% NaOCl) per 10L water

The mixed solution should be allowed to stand a few minutes for disinfection to be completed. Fire fighting need not be delayed as there will be adequate time for disinfection on route to the fire. As chlorine is corrosive, equipment should be adequately rinsed with fresh water following use.

Note: Fire fighting foams or detergents will neutralise chlorine treatments. This will not be a problem provided that tanks do not become contaminated with foam or detergent is not added to the tanks to make "wet water". Sterilisation will occur in the tank prior to foam induction.

APPENDIX 1: CLEANING AGENTS AND DISINFECTANTS

Truck cleaning agents

These may be used to improve soil removal and to degrease. They are best limited to use in washdown stations where effluent disposal systems are in place to limit grease and detergent contamination. A number of products are on the market, including products specifically designed for fungal control.

Specific cleaning agents for *Phytophthora* root rot.

Phytophthora clean™

Phytophthora clean™ is registered for the sterilisation of equipment and machinery in Tasmania for the control of *Phytophthora cinnamomi*. It is used at a rate of 200ml per 10L of water for washing surfaces cleaned of mud, and at a rate of 1000ml per 10L water in washbaths. Solution should remain in contact with surfaces for at least 30 seconds before rinsing. It is available in 20L or 200L drums and is manufactured by SDI Group, Dandenong South (Ph: 03 9768 3368, web: www.sdiinternational.com.au). Use only in accordance with the label directions and when prescribed in the job specifications for the control of *Phytophthora* root rot.

Sodium Hypochlorite

Sodium hypochlorite is recommended for sterilising water in fire-fighting units. However it needs to be used carefully. Once mixed the compound is not stable and quickly degrades, particularly in water with a high organic content. It also corrodes metal. 2 mg/l chlorine is required to kill zoospores in water with a 1 minute exposure time.

Pure alcohol and methylated spirits

These may be used for surface sterilisation of equipment once dirt has been washed off. Its application is limited to small implements and items used in disease survey work such as sampling for *Phytophthora* root-rot.

APPENDIX 2: WASHDOWN LEDGER

Date	Operator	Machine	Location

WASHDOWN LEDGER

Date	Operator	Machine	Location

WASHDOWN LEDGER

Date	Operator	Machine	Location