



Biosecurity Services Group

Business Policy

Quarantine Waste Management

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1. Purpose

Quarantine waste poses a significant risk to Australia's biosecurity. Current practices see this risk managed through strict control measures imposed on the collection, transport, storage and treatment of quarantine waste. The purpose of this policy is to consolidate and standardise AQIS' quarantine waste management principles in a single document. These waste management principles are to be applied to all activities involving items that have been deemed as being quarantine waste.

2. Scope

The Quarantine Waste Management Policy outlines AQIS' technical requirements for the collection, storage, transport and treatment of quarantine waste and applies to all animal and plant quarantine waste management activities.

Human quarantine activities (including those applicable to deceased persons) are not within the scope of this policy as they fall within the responsibilities of the Department of Health and Ageing. Ballast water management is outside the scope of this policy and is to be managed in accordance with established ballast water management protocols.

Waste management activities performed by Quarantine Approved Premises (QAP) or parties operating under Compliance Agreements (CA) should continue to manage waste in line with their QAP and CA approvals.

The Management of Imported Goods Standard Operating Procedure and associated work instructions provides guidance on deeming goods as being subject to quarantine and directing goods for destruction in line with legislated requirements.

3. Definitions

Term	Definition
Amnesty bin	An enclosed bin placed in a passenger processing area within an airport or seaport terminal in which passengers anonymously place items of quarantine concern to be destroyed.
AQIS Approved Storage Area	Area approved by AQIS for the purpose of storing quarantine waste awaiting treatment/disposal.
AQIS Approved Route	A route approved by AQIS for the purpose of transporting waste from a collection/storage site to a treatment/disposal facility.
AQIS Approved Treatment Facility	A facility approved by AQIS for the treatment/disposal of quarantine waste.
AQIS Approved Vehicle	A vehicle approved by AQIS for the transportation of quarantine waste.
Autoclave	A sterilising treatment that uses a specified combination of temperature, pressure and duration.
Collection	Gathering and containing quarantine waste in preparation for storage, transport or disposal.
Compaction	A process to reduce the volume of waste to achieve an increase in density through the application of pressure.
Compliance Agreement	An agreement between AQIS and a third party under the provisions of Section 66B of the <i>Quarantine Act 1908</i> .

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Container	A receptacle for the storage and/or transport of solid and/or liquid material.
Deep Burial	Burial with immediate coverage of at least two (2) metres of other material prior to compaction.
Disease	A micro organism, a disease agent, an infectious agent or a parasite.
Disinfection	To cleanse items from disease.
Dunnage	Dunnage is material used to support or stabilise a consignment during transport which is not attached to or forming part of the consignment. Examples of dunnage include but are not limited to used tyres, drums, gluts and skids.
Galley	The kitchen, food preparation and food assembly areas of a vessel.
Galley and Food Waste	Quarantine risk material collected from galleys which may comprise food packaging, disposable tableware (cups, plates, cutlery, etc.), food scraps, fresh flowers, fruit, and all waste contained within galley rubbish bins.
Gateway Facilities	Facilities where international mail is processed on arrival in Australia.
Incineration	To reduce to ashes through the application of heat.
Installation	A system of machinery or apparatus placed in position for use.
Overseas Vessel*	Means a vessel other than: a) an Australian vessel; or b) a Cocos Islands vessel; or c) a Christmas Island vessel; and includes a vessel: d) that is on a voyage from Australia to the Cocos Islands or the Cocos Islands to Australia; or e) that is on a voyage from Australia to Christmas Island or from Christmas Island to Australia; or f) that is on a voyage from the Cocos Islands to Christmas Island or from Christmas Island to Cocos Islands.
(*refer to Vessel)	
Primary Container	A container that is in direct contact with quarantine waste.
Quarantine Approved Place (QAP)	A place approved by the Director of Quarantine for the performance of quarantine under section 46A of the <i>Quarantine Act 1908</i> , hereafter referred to as quarantine approved premises.
Secondary Container	A container that provides additional protection for a primary container.
Secured	Fastened so as not to be displaced or to yield under strain; firmly fixed.
Sludge	Sediment collected within a tank used to store liquids.
Strip	The removal of quarantine risk material from a vessel subject to quarantine.
Transportation	Includes: a) Loading of quarantine waste which has been collected and prepared for transportation; b) Carriage of quarantine waste to a storage or treatment/disposal facility; and c) Unloading of quarantine waste at such facilities.
Treated	Subjected to an AQIS approved treatment (including a treatment which leads to the destruction of the item).

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Vessel	Means: a) a ship, boat or other description of vessel used in navigation by sea; or b) an aircraft; or c) an air cushion vehicle; or d) an off shore industry mobile unit (being an overseas installation) that is bound for, or is at, a port; and includes a part of the above.
Waste Water	Water that has been in contact with goods subject to quarantine. This includes water used to wash containers and machinery.

4. Policy Statement

4.1. Legislative Outline

Legislation applicable to the management of quarantine waste:

- *Quarantine Act 1908* (the Act);
- Quarantine Regulations 2000; and
- Quarantine Proclamation 1998.

4.2. Quarantine Waste

4.2.1. What is “quarantine waste”?

The Quarantine Regulations 2000 defines waste as including:

- Material used to pack or stabilise cargo;
- Galley and food waste;
- Human, animal or plant waste; and
- Refuse or sweepings from the holds or decks of a vessel or installation.

However, for operational purposes the following are also managed in the same way as quarantine waste:

- Imported goods which cannot meet import conditions;
- Goods subject to quarantine which the importer has elected to dispose of; and
- By-products and waste from processing of items subject to quarantine (unless those waste materials are released from quarantine as a result of the processing).

4.2.2. Items exposed to/in contact with quarantine waste

Section 18(2)(c) of the *Quarantine Act 1908* stipulates that “all goods which have been in contact with or exposed to infection from a quarantinable disease or quarantinable pest or from any person or goods subject to quarantine” are subject to quarantine. As such, all items which have been exposed to or in direct contact with untreated quarantine waste become subject to quarantine.

Dependent upon the nature of the item which has come in contact with quarantine waste, it must be:

- Treated in an AQIS approved manner to address any residual quarantine risk; or
- Destroyed as quarantine waste.

4.2.3. Where is quarantine waste collected?

Quarantine waste is collected from a range of premises and activities. Primary sources of quarantine waste are:

- Ports
- Gateway Facilities
- Quarantine Approved Premises
- Facilities processing goods subject to quarantine
- Aircraft
- Ships

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- Passenger Terminals
- Airport Catering Facilities

4.2.4. Vessels and quarantine waste

Waste from an overseas vessel must be treated as quarantine waste if the vessel remains subject to quarantine. Once a vessel has been released from quarantine, all waste discharged from the vessel may then be treated as domestic waste rather than quarantine waste.

Quarantine waste onboard a vessel subject to quarantine may be moved, collected and secured by the crew of the vessel. Where the quarantine waste is retained on board, it must be securely contained while the vessel remains within Australia (including Australian waters).

Quarantine waste collected from onboard vessels subject to quarantine must be contained within primary containers, at a minimum, prior to removal from the vessel.

4.2.5. How is quarantine waste collected?

4.2.5.1. Ports, Gateway Facilities, Quarantine Approved Premises and Co-regulatory Processing Facilities

Quarantine waste is collected through normal operations and stored in quarantine waste containers within ports, gateway facilities, quarantine approved premises and co-regulatory processing facilities.

4.2.5.2. Aircraft

Onboard international aircraft quarantine waste is removed and collected by hand from the galleys and cabin. This includes the contents of vacuum cleaners used to clean the aircraft.

4.2.5.3. Ships

Cargo transport ships subject to quarantine routinely contain all quarantine waste onboard while in port. Due to the larger volume of waste produced, passenger vessels will usually arrange for approval to discharge waste for disposal.

Where quarantine waste is discharged from a ship subject to quarantine, it should be collected and removed by the crew and given into the custody of a transport company operating under a compliance agreement.

4.2.5.4. Yachts

Yachts subject to quarantine are routinely stripped of all quarantine material held onboard in the first port of arrival. This is done under AQIS direction/supervision.

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4.2.5.5. Passenger Terminals

Within international passenger terminals, quarantine waste is placed in amnesty bins and other waste receptacles by disembarking and transiting international passengers. Quarantine waste is also collected by cleaners of these facilities in the equipment used to clean the terminal such as vacuum cleaners.

4.2.5.6. Airport Catering Facilities

Quarantine waste is collected at airport catering facilities through the cleaning of re-usable items removed from international aircraft. Food scraps and other quarantine risk material are manually collected and placed within quarantine waste bins awaiting transport and treatment.

4.2.5.7. Quarantine Approved Premises and Compliance Agreements

Quarantine waste is generated through a range of activities such as the cleaning of items contaminated with quarantine risk material, left over materials, abandoned goods and by-products and waste from processing items subject to quarantine. Co-regulatory arrangements are in place to handle this material in the form of compliance agreements and quarantine approved premises.

4.2.5.8. Gateway Facilities

Within gateway facilities, quarantine waste is placed in waste bins and other waste receptacles by quarantine officers, Australian Customs officers and mail centre staff. Quarantine waste is also collected by cleaners of these facilities in the equipment used to clean the gateway facility such as vacuum cleaners.

4.3. General Requirements for Quarantine Waste Management

4.3.1. State/Territory and Local Government Requirements

All quarantine waste management activities must be performed in compliance with applicable local and state/territory legislative, licensing and operational requirements.

It is the responsibility of the person performing waste management activities to ensure these requirements are met.

4.3.2. Who can conduct quarantine waste management activities?

Quarantine waste management activities must be performed only:

- by a quarantine officer; or
- a person under the direct supervision of a quarantine officer; or
- a person under the direction of a quarantine officer; or
- by an operator who has a current compliance agreement with AQIS to perform the relevant activity; or
- by an accredited person operating at quarantine approved premises approved to perform the relevant activity.

The unauthorised conduct of quarantine waste related activities should be reported to the National Program or the Compliance and Investigations Unit (C&I) in accordance with Program and C&I policy. Reports of unauthorised activity can be made anonymously by members of the public and industry by contacting C&I through the AQIS Redline on 1800 803 006.

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4.3.3. Containment

All quarantine waste must be handled and stored in such a way as to ensure it is effectively contained. That is in a manner which prevents unauthorised access, contamination of other goods, escape into the environment of pests and/or diseases, loss, spread or spillage.

4.3.4. Isolation

Quarantine waste must at all times be kept physically separated from other goods (including during transport), to minimise any risk of cross contamination. Isolation can be achieved through the use of physical barriers or distance.

Where distance is used to isolate waste, the waste must not be stored above or below other material and a minimum separation of two (2) metres must be maintained from other goods/waste.

4.3.5. Containers

At a minimum, all quarantine waste must be stored or transported in a secure primary container. Secondary containers are to be used to provide additional protection to a primary container, particularly during transport or for longer term storage.

Containers used for the storage and transport of quarantine waste must be in good working order and free of cracks, tears, dents or other damage/defects which may detract from their ability to effectively contain quarantine waste. If a container exhibits signs of damage or deterioration it must either be repaired or discarded.

The outermost container used for the storage and/or transport of quarantine waste must be marked as "Quarantine Waste" using black lettering on a yellow background.

➤ Primary Containers

Primary containers are those in direct contact with quarantine waste and are typically disposable receptacles such as bin liners or garbage bags. Some operators may choose to use reusable receptacles for the storage of quarantine waste such as plastic containers, specimen bottles, and bins or skips (particularly where items are too large to be bagged).

Where quarantine waste is liquid in nature (i.e. waste water) the holding tanks used for its storage are the primary container.

Where skips are the primary container, they must be lined to prevent leakage (if not leak proof) and covered with a weatherproof tarpaulin or other secure covering such as a lid.

➤ Secondary Containers

Secondary containers are those used to provide additional protection to primary containers and are typically sturdy reusable receptacles such as:

- Bins (including sulo bins, wheelie bins and compacter bins);
- Skips;
- Hoppers;
- Plastic containers;
- Autoclave (biohazard bins) containers; or
- Cargo containers.

Secondary containers must be solid, strong and durable. Where used for the transportation of quarantine waste, secondary containers must be strong enough to withstand the shocks and loadings normally encountered during transport.

Secondary containers must be able to be securely closed to prevent access by vermin, and leakage or loss of contents under normal storage and transport conditions.

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Secondary containers may be used to hold any number of primary containers so long as the secondary container can be securely closed and under normal conditions of storage or transport, the primary containers will not break, puncture or leak.

Absorbent material may be used within secondary containers to absorb any potential leakage of liquids from the primary container/s.

4.3.6. Cross-contamination/Escape of pests

Primary containers must be sealed/closed as soon as is practical to prevent the escape of quarantine waste material or live pests.

Where the primary container is a water storage tank, the container is to be fully enclosed - i.e. open-topped tanks/holding ponds are not permitted.

Secondary containers must be kept closed to prevent the escape of quarantine waste material or live pests. Where insect pests are likely to be present, insecticidal strips may be fitted within the container. These strips must be used and replaced in line with the manufacturer's instructions.

4.3.7. Hygiene

Any equipment/container that has been used or in contact with quarantine waste or could have been potentially contaminated by quarantine waste must be treated (cleaned, disinfected, decontaminated) prior to re-use or disposed of in accordance with the requirements of this policy.

Treatment of containers to allow re-use must be done through:

- Autoclaving;
- Heat treatment;
- Gamma irradiation; or
- Disinfection.

4.3.8. Spillage

Any spilled quarantine waste must be collected and contained and the site of the spillage cleaned immediately. This includes the disinfection or disposal of any equipment or other material contaminated by the spillage of the quarantine waste.

All premises holding or dealing with quarantine waste must have appropriate equipment on hand to deal with spillages. Appropriate equipment can include, but is not limited to: brooms, shovels, buckets, absorbent litter, tarpaulins and a supply of AQIS Approved Disinfectant.

Where immediate action cannot be taken to fully address spillage, the local AQIS Regional Office is to be notified immediately.

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4.3.9. Traceability (Chain of Custody)

All persons involved in quarantine waste related activities must maintain records demonstrating compliance with requirements and the chain of custody of quarantine waste. Information retained in relation to the quarantine waste activity performed must include (as applicable):

- Records of movement including receipt, despatch and/or delivery
- Source of the waste
- Nature/type of the waste
- Quantity – either in volume or weight
- Treatment/s applied and date
- Cleaning of equipment
- Maintenance/calibration of equipment
- Spillages/loss of quarantine waste

Records are to be maintained for a period of no less than two (2) years and must be made available to an AQIS officer on request.

Specific requirements will be identified in the compliance agreement or quarantine approved premises conditions of approval applicable to the activity being conducted, where the activity is performed under a third party arrangement.

4.4. Storage of Quarantine Waste

4.4.1. Permitted Timeframes for Storage

4.4.1.1. Quarantine Waste – Live Insects Detected

Where quarantine waste contains live insects, it must be immediately contained and treated as soon as possible.

Quarantine waste containing live insects may be initially treated to address the presence of live insects or alternatively may be disposed of by an AQIS approved method. Where appropriate, a knockdown spray should be considered for immediate use to reduce the chance of escape to the environment prior to treatment.

Once live insect concerns have been addressed by treatment, the quarantine waste may then be held for as long as the nature of the waste permits in line with this policy.

4.4.1.2. Quarantine Waste – Perishable Goods

Perishable goods, such as fresh fruit and vegetables and other non-shelf stable food products, must be stored for no longer than 48 hours at ambient (room) temperature.

4.4.1.3. Quarantine Waste – Other Goods

Non-perishable quarantine waste must be stored at ambient temperature for no more than 21 days.

4.4.1.4. Quarantine Waste – Live Animals Subject to Quarantine

Faecal material produced by animals in the initial stages of their quarantine detention must be destroyed as quarantine waste, primarily to address imported weed seed concerns. The duration of this requirement is determined by the relevant import program. Waste collected during this period must not be held for longer than 30 days.

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4.4.1.5. Quarantine Waste – Held beyond specified timeframe

Where treatment/disposal of waste cannot be performed within the specified timeframe, it must be held at or below 4°C and may remain held at this temperature for no more than three (3) months awaiting treatment.

This option is not permitted for waste containing live insects.

Where waste is not to be treated or destroyed within three (3) months, AQIS is to be contacted before the end of the three (3) month period to make alternative arrangements.

4.4.1.6. AQIS Approved Storage Areas

All quarantine waste must be stored within an AQIS Approved Storage Area or Quarantine Approved Premises awaiting transportation or treatment/disposal.

Note: Overseas vessels do not require approval of onboard waste storage areas.

AQIS Approved Storage areas must be:

- of sufficient size to house all quarantine waste within acceptable containers; and
- secured/locked to restrict unauthorised access.

Where waste is to be held at ambient temperature in excess of the permitted timeframe, the AQIS Approved Storage Area must have facilities to hold quarantine waste at or below 4°C. Refrigerated cargo containers are commonly used for this purpose.

4.5. Transport

Quarantine waste must be transported only in an AQIS Approved Vehicle via an AQIS Approved Route with the destination being a quarantine waste storage or disposal facility.

4.5.1. Quarantine waste to be secured during transport

All quarantine waste must be contained and secured during transport. All containers (primary or secondary) must be sealed.

Where waste is not being transported within an enclosed vehicle all storage containers must be securely fastened to the vehicle to prevent movement, spillage or loss of quarantine waste during transport.

4.5.2. AQIS Approved Vehicles

Vehicles used to transport quarantine waste must have been granted prior approval by AQIS to conduct this activity.

Vehicles used for transporting quarantine waste must be licensed to carry such material where required by the relevant State/Territory and local government authorities.

Vehicles used for transporting quarantine waste must be constructed in a manner which prevents leakage or loss of contents under normal conditions of transport through vibration and changes in temperature or humidity.

Vehicles must display signage indicating that they are transporting quarantine waste.

All vehicles used in the transportation of quarantine waste must be suitably equipped to deal with the spillage of quarantine waste and should carry appropriate equipment (i.e. brooms, shovels, buckets, absorbent litter, tarpaulins and AQIS Approved Disinfectant).

All vehicles must meet the containment and hygiene requirements associated with the class of container they represent.

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- Vehicles in direct contact with quarantine waste, such as vacuum trucks used to transport liquids, are considered to be primary containers.
- Vehicles carrying quarantine waste but not in direct contact with the waste (i.e. carrying bins/containers) are considered to be secondary containers.

4.5.3. AQIS Approved Routes

Quarantine waste is only to be transported via routes that have been approved by AQIS for that purpose. Proposed routes are to be submitted to the local AQIS Regional Office for approval.

Wherever possible, quarantine waste is to be transported through metropolitan areas on main roads. Where circumstances preclude this, AQIS may permit quarantine waste to be transported through rural areas under conditions it deems appropriate.

A standard transportation route and a contingency route (for use in event of road closures) must be approved before waste may be transported between locations. Copies of the approved routes are to be available to the driver of a transport vehicle for reference at all times.

Any alteration to or deviation from an AQIS Approved Route must be approved by AQIS prior to using the alternate route. If an emergency detour is required, the driver of the vehicle must contact the local AQIS Regional Office immediately.

4.5.4. Traffic accidents

In the event that transport vehicles containing quarantine waste are involved in an accident that results in the spillage of quarantine waste, AQIS must be notified immediately. Every effort is to be taken to contain spilled quarantine waste.

Should emergency services attend the site of the accident, the driver of the vehicle must inform attending emergency services personnel that quarantine waste has been spilled and all efforts are to be taken to prevent further spread.

4.5.5. Waste transported by AQIS

Where quarantine waste is to be transported by AQIS the principles above are to be met, other than:

- AQIS vehicles do not require additional signage where marked with AQIS signage.
- AQIS officers are not required to seek prior approval of transport routes but are to adhere to the principles identified above.

4.6. Treatments for Quarantine Waste

Not all treatment and disposal methods are suitable for all kinds of quarantine waste. A suitable treatment or disposal method can be located within the [Quarantine Risk Material Matrix](#) or relevant [ICON](#) listing.

The treatment and/or disposal of quarantine waste is to occur only at a quarantine approved premises or under direct supervision of a quarantine officer.

All treatments state a minimum set of requirements for dosage, temperature, duration, concentration and/or pressure as applicable. Where the requirements of a treatment cannot be met, AQIS is to be contacted prior to treatment proceeding.

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4.6.1. Chemical Disinfection

The following requirements apply to the chemical disinfection of items exposed to quarantine waste:

- Only AQIS Approved Disinfectants, which have been made up in accordance with manufacturer's instructions, are to be used for disinfection.
- All items to be disinfected must first be cleaned to remove all traces of quarantine waste material. All removed material must be disposed of as quarantine waste.
- Items to be disinfected must either be:
 - thoroughly sprayed with the AQIS Approved Disinfectant; or
 - immersed in the AQIS Approved Disinfectant.
- Any work area, container, sink, or tool that has been used for disinfection should be thoroughly rinsed with clean water upon completion.
- Used disinfectant solution should be discharged to sewer.
- Disinfection equipment is to be operated and maintained in accordance with the manufacturer's operating procedures. Maintenance records shall be kept for equipment and presented to AQIS for auditing purposes or on request.

4.6.2. Steam Sterilisation

The following requirements apply to the steam sterilisation of items exposed to quarantine waste:

- Steam sterilisation must be performed at minimum core temperature of 90°C for 2 hours.
- Items being steam sterilised must be prepared to allow for direct contact with steam.
- Steam sterilisation equipment is to be operated and maintained in accordance with the manufacturer's operating procedures. Maintenance records shall be kept for equipment and presented to AQIS for auditing purposes or on request.
- A mechanism must be in place to automatically monitor and record the operating conditions of the steam steriliser. Records indicating time and temperatures for the treatment of quarantine waste must be created for each run and made available to AQIS for auditing purposes or on request.

4.6.3. Steam Cleaning

The following requirements apply to the steam cleaning of items exposed to quarantine waste:

- All items to be steam cleaned must first be cleaned to remove all traces of quarantine waste material. All removed material must be disposed of as quarantine waste.
- The item must be thoroughly steam cleaned with steam coming in direct contact with all affected areas of the item.
- Steam cleaning equipment is to be operated and maintained in accordance with the manufacturer's operating procedures. Maintenance records shall be kept for equipment and presented to AQIS for auditing purposes or on request.

4.6.4. High Temperature Incineration

The following requirements apply to the high temperature incineration of quarantine waste:

- Quarantine waste is to be treated by high temperature incineration at a minimum temperature of 1000°C.
- Quarantine waste being incinerated is to be of a size that allows for rapid penetration of heat to the centre. This may require quarantine waste to be milled, macerated, ground or shredded to a size that allows for rapid penetration of heat to the centre dependent upon the material being treated.
- Where milling, maceration, grinding, shredding or similar is required, it must be done in such a way as to minimise the escape of any waste material into the environment.

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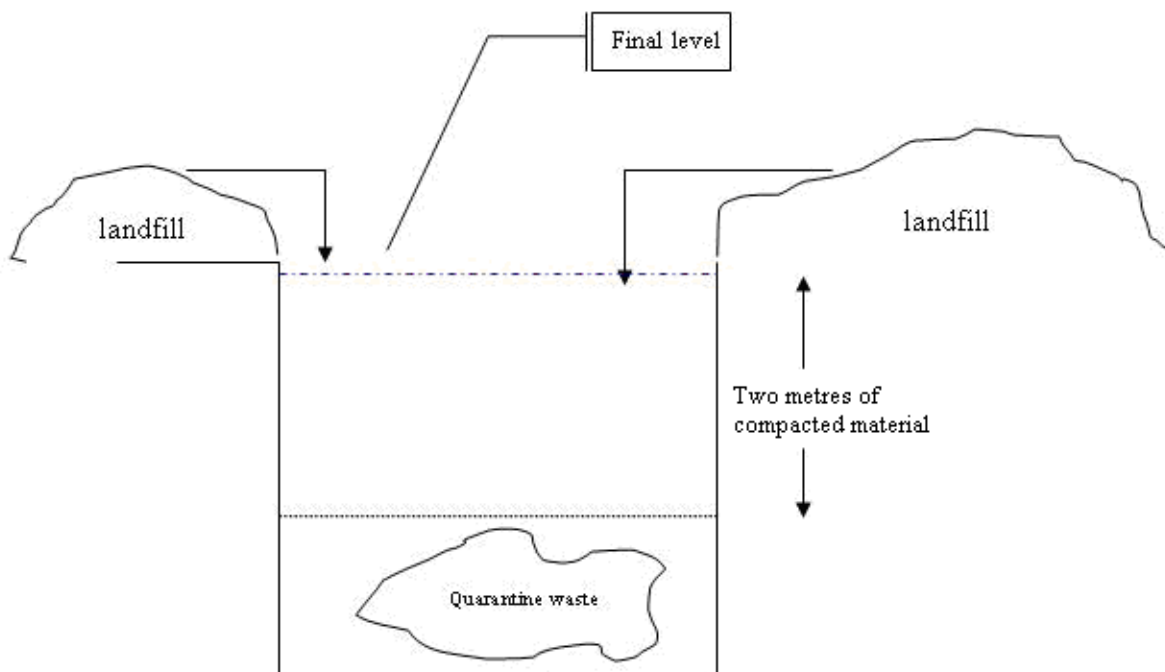
- A mechanism must be in place to automatically monitor and record the operating conditions of the incinerator. Records indicating time and temperatures for the treatment of quarantine waste must be created for each run and made available to AQIS for auditing purposes or on request.
- Waste water that has been in contact with untreated quarantine waste must be contained and treated or disposed of in line with AQIS requirements.
- Incineration equipment is to be operated and maintained in accordance with the manufacturer's operating procedures. Maintenance records shall be kept for equipment and presented to AQIS for auditing purposes or on request.

4.6.5. Deep Burial

The following requirements apply to the deep burial of quarantine waste:

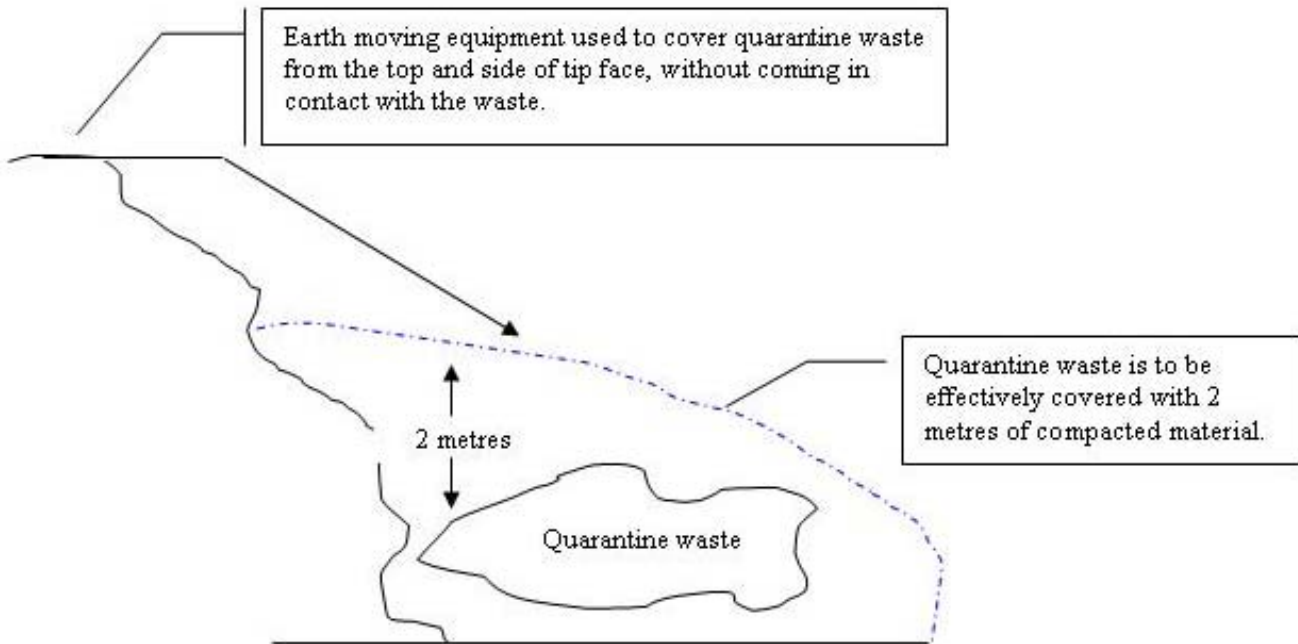
- Quarantine waste is to be buried beneath a two (2) metre deep layer of compacted material.
- The site shall be prepared prior to delivery of quarantine waste to the landfill site to permit direct discharge of quarantine waste into the burial site.
- Tipped quarantine waste must be immediately covered with non-quarantine waste material, prior to compaction. Landfill machinery must not be directly driven over uncovered quarantine waste.
- Measures must be in place to prevent the loss of quarantine waste at the time of tipping, burial and compaction (by wind, birds, vermin, feral animals, etc.).
- The site of quarantine waste shall be recorded and the site must not be disturbed in any way that could lead to the exposure of quarantine waste to the environment.
- The two acceptable methods for deep burial are illustrated below.

OPTION 1: Deep burial using a 2 metre deep pit purposely excavated for burying quarantine waste



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OPTION 2: Burial of quarantine waste at the base of the tip face.



4.6.6. Autoclave

The following requirements apply to the autoclaving of quarantine waste:

- Quarantine waste is to be treated by autoclave at a minimum core temperature of 121°C for 30 minutes at 15psi or equivalent. AQIS may approve alternative time, temperature and pressure combinations on a case-by-case basis.
- Quarantine waste must be prepared and loaded into the autoclave in such a way that allows for direct contact with steam. This may require quarantine waste to be milled, macerated, ground or shredded to a size that allows for rapid penetration of heat to the centre dependent upon the material being treated.
- Where milling, maceration, grinding, shredding or similar is required, it must be done in such a way as to minimise the escape of any waste material into the environment.
- Each run is to contain indicators to demonstrate the effectiveness of the autoclave run. Indicators are to be placed as close to the thermal centre as practicable.
- A mechanism must be in place to automatically monitor and record the operating conditions of the autoclave. Records indicating time, temperature, pressure and indicator outcomes for the treatment of quarantine waste must be created for each run and made available to AQIS for auditing purposes or on request.
- Autoclave equipment is to be operated and maintained in accordance with the manufacturer's operating procedures. Maintenance records shall be kept for equipment and presented to AQIS for auditing purposes or on request.
- Annually or after periods of shut down for maintenance, each autoclave must be calibrated by a National Association of Testing Authorities (NATA) accredited testing organisation or equivalent.
- Load tests using commercially available biological indicators that are designed to demonstrate that an autoclave is capable of killing microorganisms (e.g. *Bacillus stearothermophilus*) shall be conducted monthly. Results of the load test shall be recorded. AQIS shall be notified on any load test failures. Where spore tests are used as an indicator in each load, the results of these can double as the monthly load test.

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- Any run failures shall be recorded in the log book and the waste shall be re-treated.

4.6.7. Gamma Irradiation

The following requirements apply to the gamma irradiation of quarantine waste:

- Gamma irradiation equipment is to be operated and maintained in accordance with the manufacturer's operating procedures. Maintenance records shall be kept for equipment and presented to AQIS for auditing purposes or on request.
- Where quarantine waste is plant material only it may be irradiated at 25Kgray. All other quarantine waste is to be irradiated at 50Kgray unless otherwise directed by AQIS.

4.6.8. Heat Treatment

The following requirements apply to the heat treatment of quarantine waste:

- Quarantine waste is to be treated by dry or moist heat at the minimum core temperature and time duration specified. This may be:
 - Dry heat at 160°C for 2 hours
 - Dry heat at 85°C for 8 hours
 - Moist heat at 85°C for 48 hours at 50% humidity
 - Moist heat at 95°C for 24 hours at 50% humidity
- Quarantine waste being heat treated is to be of a size that allows for rapid penetration of heat to the centre. This may require quarantine waste to be milled, macerated, ground or shredded to a size that allows for rapid penetration of heat to the centre dependent upon the material being treated.
- Where milling, maceration, grinding, shredding or similar is required, it must be done in such a way as to minimise the escape of any waste material into the environment.
- Where moist heat treatment is performed, the waste to be treated must be prepared and loaded in a way that allows for direct contact with steam. This may require opening or puncturing/slashing packaging to allow for effective penetration.
- Heat treatment equipment is to be operated and maintained in accordance with the manufacturer's operating procedures. Maintenance records shall be kept for equipment and presented to AQIS for auditing purposes or on request.
- A mechanism must be in place to automatically monitor and record the operating conditions of the heat treatment equipment. Records indicating time, temperature and humidity (if applicable) for the treatment of quarantine waste must be created for each run and made available to AQIS for auditing purposes or on request.
- Treatment providers should be aware that heat treatments at the required rates may cause treated items to smoulder or ignite.

4.6.9. Export

The export of quarantine waste effectively mitigates any quarantine risk to Australia. It is the responsibility of the person exporting waste to ensure that all domestic and international requirements associated with the exportation of waste are met.

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4.7. Treatments for Liquid/Sludge Waste Only

Not all treatment and disposal methods are suitable for all kinds of waste. A suitable treatment or disposal method must be selected for the type of waste in line with the Quarantine Risk Material Matrix or relevant ICON listing.

4.7.1. Chlorination

The following requirements apply to the chlorination treatment of quarantine waste water:

- Water that contains any visible particulates must be filtered through a filter of 100 microns or less prior to the addition of chlorine based chemicals.
- All solids and sludge collected through filtration or sediment collection are to be treated or disposed of as quarantine waste.
- Water to be chlorinated must be held at ambient temperature as heating may adversely affect the efficacy of the treatment.
- Sufficient chemical must be added to achieve a final concentration of at least 200ppm chlorine at a neutral pH.
- Once the chemical has been added, the water is to be mixed for ten minutes and held for a minimum of 1 hour.
- The following are examples of chemicals that may be used for chlorine treatment of quarantine waste water:
 - Sodium hypochlorite;
 - Calcium hypochlorite; or
 - Bleach.
- Following the chlorination process, the water may be treated with a neutralising agent (e.g. sodium thiosulphate) prior to discharge if required.
- Chlorination solutions must be made up in accordance with manufacturer's instructions or as per AQIS direction.

4.7.2. Discharge

The following requirements apply to the discharge of quarantine waste water:

- All quarantine waste water must be filtered prior to discharge.
 - For washbays, filtration must be through a final filter of 100 microns or less.
 - Other facilities must have in place a filtration mechanism to capture solid waste prior to discharge such as soil or grease traps, sumps or the like.
- All solids and sludge collected through filtration or sediment collection are to be treated or disposed of as quarantine waste.
- Where no treatment other than filtration has occurred, waste water may only be:
 - Discharged directly to a sewer.
 - Discharged into a holding tank (where these are pumped out regularly) while awaiting discharge to sewer or treatment.
 - Discharged into an onsite treatment facility for re-use on a quarantine approved washbay – Refer to section 4.7.3 for additional requirements.
- Filtered untreated waste water must not be discharged directly to sea, stormwater, through leach drains, rubble pits or the like.
- Once waste water has been both filtered and treated it may be discharged without restriction.

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4.7.3. Recycling of waste water (wash bay use only)

The following requirements apply to the recycling of quarantine waste water:

- Waste water may be recycled for further use on washbays only. Any alternative use of recycled waste water requires separate AQIS approval.
- All quarantine waste water must be filtered through a final filter of 100 microns or less. All solids and sludge collected are to be treated or disposed of as quarantine waste.
- Where no waste water treatment is undertaken (or treatment equipment is not operational), the recycled water can be used only for initial washing of goods. Items washed in untreated waste water can only be removed from the washbay after a final wash in domestically supplied water or equivalent (e.g. bore water if currently used).
- Where recycled water is treated to meet the requirements of the Australian Drinking Water Guidelines (See Attachment 1), items washed in it may be removed from the washbay without further washing in domestic water.
- On site water treatment systems must be tested by a Quarantine Approved Laboratory (Class 5.2) which holds NATA accreditation for water analysis to ensure the applicable standard has been achieved. Testing is to be repeated quarterly or after any breakdowns occur. All records of breakdowns and related repairs and all results of tested of recycled water shall be kept and provided to AQIS for audit purposes and on request.
- Any waste water not recycled is subject to quarantine waste water treatment and discharge requirements.

5. Related Material

Airports – Vessel Classification System for the collection of quarantine waste.

Quarantine Risk Material Matrix – For AQIS approved treatments

ICON – The AQIS import conditions database.

Quarantine Management of Imported Goods Standard Operating Procedure (AQIS Internal Reference Only)

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6. Detailed Version History

Date Published	Version	Detail reason for issue or amendments	Author / Document Owner (Program)
23 July 2010	1.0	The document was revised to allow for finalisation and publication without major changes to current CA & QAP requirements- July 2010. Implementation will be managed separately following policy approval.	Co-regulation Improvement Program
10 August 2010	2.0	Minor update to scope to clarify the policy applies to all animal and plant quarantine waste management activities and to remove reference to 'soil' from the first picture of deep burial in line with text.	Co-regulation Improvement Program
19 Oct 2010	3.0	Minor update to remove legislation reference in section 4.3.2.	Co-regulation Improvement Program

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7. Attachment 1: Australian Drinking Water Guidelines – Microbiological (Bacteria) Standard.

Microbiological guidelines that recycled quarantine waste water must meet are:

➤ **Thermotolerant Coliforms (or alternatively *E. coli*) - Nil in 100ml**

If thermotolerant coliforms (or alternatively *E. coli*) are detected, then irrespective of the number of organisms, a repeat sample should be taken from the same site and tested for the presence of thermotolerant coliforms (or alternatively *E. coli*) and total coliforms. If the repeat sample is negative for both organisms, then the recycling system can be passed for use. If the repeat sample is positive for either thermotolerant coliforms (or alternatively *E. coli*) or coliforms, the recycling system is to be deemed as failing to meet AQIS requirements and is not to be used for final washings. The owner of the system will need to review, amend and retest the system until a "pass" can be achieved.

➤ **Coliforms - Nil in 100ml**

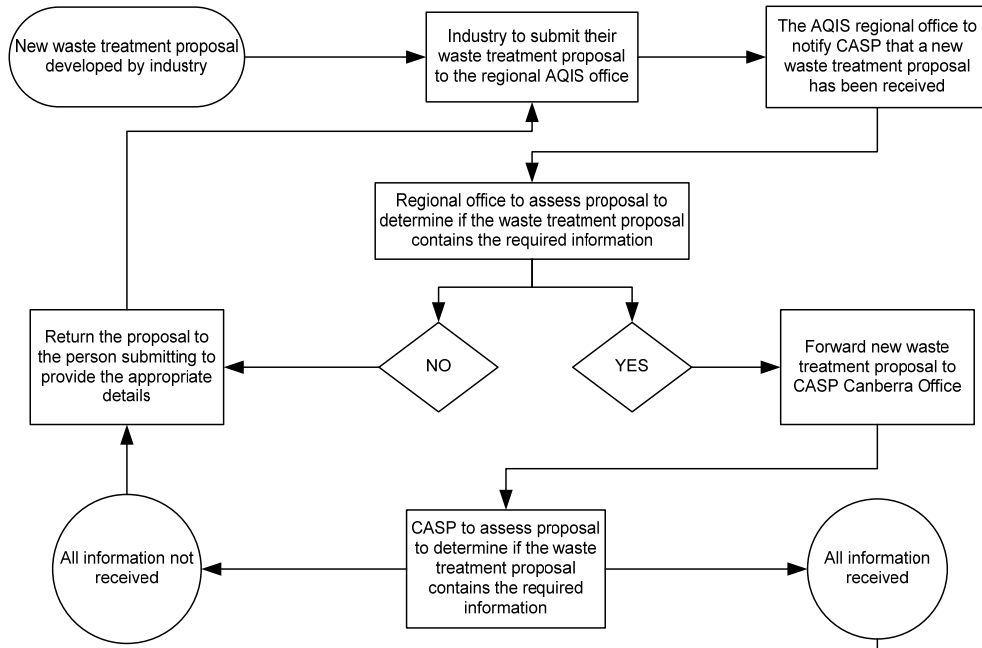
If coliforms are detected, then irrespective of the number, a repeat sample should be taken from the same site and tested for the presence of Thermotolerant coliforms (or alternatively *E. coli*) and coliforms. If the repeat sample is negative both organisms then the recycling system can be passed for use. If the repeat sample is positive for either thermotolerant coliforms (or alternatively *E. coli*) or coliforms, the recycling system is to be considered as failing to meet AQIS requirements and is not to be used for final washings. The owner of the system will need to review, amend and retest the system until a "pass" can be achieved.

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Attachment 2: Assessment Process for New Waste Treatment Proposals

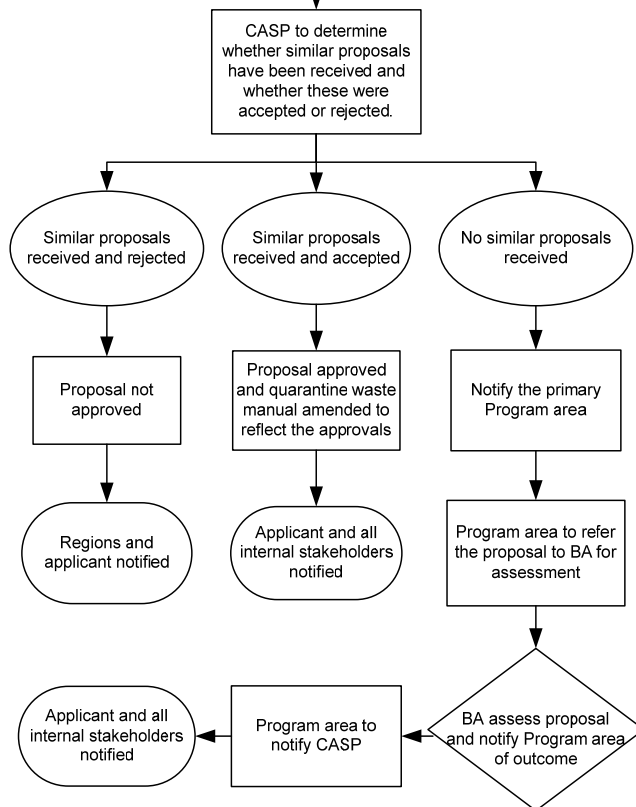
It is recognised that with advances in technology and changing priorities of State and Territory Environmental Protection Authorities (EPA), new proposals for the management of quarantine waste will be presented to AQIS for consideration. This section details a step-by-step standard procedure for assessing new proposals for the management of quarantine waste.

Assessment Process for new proposals for the Management of Quarantine Waste



Information required for a new quarantine waste treatment proposal:

- The type(s) of waste to be treated (e.g., potentially all waste, galley waste, water, plant material, plant material including seed, pig meat animal material etc).
- Where the treatment premises will be located.
- The complete treatment process including any monitoring of the critical control points in the process.
- Any efficacy information in regards to the treatment. This can include domestic trials, overseas usage etc, but does not include domestic EPA approvals.



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