Ministry for Primary Industries
Manatū Ahu Matua

Treatment Requirement

Approved Biosecurity Treatments

MPI-ABTRT

27 March 2024

Issued by the Ministry for Primary Industries

New Zealand Government

TITLE

Treatment Requirement: Approved Biosecurity Treatments

COMMENCEMENT

This Treatment Requirement is effective from 27 March 2024

ISSUING BODY

This Treatment Requirement is issued by the Ministry for Primary Industries.

Dated at Wellington, 27 March 2024

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Introduction

This introduction is not part of the Treatment Requirement, but is intended to indicate its general effect.

Purpose

When incorporated by reference into an import health standard or directed by an inspector this document specifies measures to be applied to risk goods requiring treatment prior to obtaining biosecurity clearance.

Background

Imported risk goods have the potential to introduce pests and unwanted organisms into New Zealand. The Biosecurity Act 1993 (the Act) prescribes requirements for the exclusion, eradication and effective managing of pests and unwanted organisms in New Zealand. Unwanted pests/organisms have the potential to cause harm to natural and physical resources and human health in New Zealand. The Ministry for Primary Industries (MPI) is responsible for enforcing the provisions of the Biosecurity Act 1993.

Who should read this Treatment Requirement?

All importers of goods to which an import health standard applies that incorporates by reference this treatment requirement or have had goods directed for treatment.

Why is this important?

Importers must ensure they comply with the relevant import health standard (IHS) for importing goods. For goods to be cleared, importers may need to comply with directions for treatment. Failure to meet the requirements of the IHS or a direction may result in the goods being reshipped or destroyed.

Document History

Refer Appendix 1

Other information

If treatments are being applied in New Zealand, the treatment must be carried out by a treatment provider approved or under supervision by MPI. The treatment provider may only apply treatments given in their scope of approval and some treatments may not be available at a particular location. Importers should check treatment availability prior to importing goods. A list of approved providers is available at: https://www.mpi.govt.nz/import/border-clearance/transitional-and-containment-facilities-for-border-clearance/find-treatment-options-and-provider/

Importers are reminded that:

a) They import contaminated goods into New Zealand at their own risk, goods may be reshipped or destroyed in some circumstances;
b) If pre-clearance decontamination is required, this is entirely at the importer's risk and expense in all respects;
c) Specifically, if treatment is required this is a private arrangement between the treatment supplier and importer and not carried out on behalf of MPI;
d) Whilst MPI will ensure that only suitably qualified treatment suppliers are available for use by the importer MPI accepts no responsibility whatsoever for any failure by the treatment supplier in its contract for treatment services with the importer.

e) Pre-shipment treatments may differ and are listed in the relevant import health standard, see the search facility: https://www.mpi.govt.nz/legal/compliance-requirements/ihs-import-health-standards/

The measures are separated for convenience into commodity groups commonly imported into New Zealand and list the approved treatment options. The rates or dosages, temperature ranges, exposure times needed and the source from which the treatment is obtained are the **minimum** requirements for each treatment. A short code has been allocated to simplify reference to the specified treatment and these may be revised over time. Notes and comments are included and must be read in conjunction with the measure specified to ensure the success of the selected treatment.

For some treatments the pest may be sterilised rather than killed (e.g., irradiation) or it may take some time hours (hrs) or days for the pest to die. Factors influencing this are the type of treatment, dose, temperature (before, during and after treatment), insect species and life stage.

Methyl bromide (MeBr) is only to be used for official treatments see: Find out about official use of Methyl bromide.

The minimum retention level[1] for MeBr is prescribed as 30% unless otherwise stated (e.g., a 2-hour schedule requires 60% retention at the end of 2 hours). MeBr retention charts (30% to 80%) are available here.

Any item awaiting treatment must be isolated and held securely to contain the biosecurity contamination or pests and be treated within the time specified on the Biosecurity Authority Clearance Certificate (BACC). If a direction is received to move an item to another facility for treatment, then this must happen in a secure manner to contain the biosecurity contamination or pest.

An importer may propose an alternative treatment for approval by MPI. Full details that prove equivalence of efficacy are to be provided to MPI before approval can be granted and treatment may commence. The International Plant Protection Convention ISPM 28 should be used as guidance when submitting a treatment for MPI approval: Costs involved in the evaluation process may be recovered and decisions on alternative chemicals and treatments may be subject to delay.

The importer of risk goods, including baggage, mail or personal effects that are treated before clearance must

a) Pay the actual and reasonable costs of the treatment; and
b) Bear the costs (if any) of packaging, storing, forwarding, and returning the goods before and after treatment.

It is the treatment provider's responsibility to ensure the goods are safe to access or handle after treatment. Treatment certificates will be verified by MPI before the goods treated will be given clearance.

These measures may be reviewed and amended at any time at the discretion of the chief technical officer (CTO). Treatment providers must ensure that the latest version of this schedule is being used at all times (date at the top of the page).

[1] Percentage of gas retained in the chamber at the end of a fumigation

How to use this document

The document is divided in sections representing different types of commodities as listed in the Contents page 2.

Use the search function (or CTRL + F) to look for a specific commodity, most commodities are listed under their English names except seeds for sowing which use their scientific genus name (for example, wheat is found using "*Triticum*").

Once the commodity is found in the document, identify the correct reason for treatment (for example fungi or insects). There are often multiple reasons for treatment for the same commodity. Most of the pests described under "reason for treatment" are generic (fungi, insects, mites), the specific pests for each commodity are listed in their respective import health standard. Only regulated pests require official treatment prescribed by MPI.

For each reason for treatment there will be one or more treatment code "short code". If only this code is available and the other columns are empty, this mean the full description of the treatment requirements will be found in a different page of the document. Do take note of any comment and section referring to the commodity or reason for treatment for later use.

Search the document for the treatment code to find the full requirement (usually the first iteration in the document). Each row under one short code corresponds to one option, there might be multiple options available to accommodate different concentrations and temperature (for fumigation) or to give multiple choices. Many commodities have multiple options so this step might need to be repeated for each option.

Part 1: Treatments

1.1 Live Animals as Hitchhikers and Illegal Imports

Reason for Treatment	Requirements to be met	Treatment Procedure to follow
Interception of Small Animals; includes fish, amphibians, reptiles, and small mammals See **Note 1** below re CITES	Euthanasia as directed. Also refer below for treatment with carbon monoxide. [Unless stated otherwise, the processes here are to be undertaken or supervised by an Inspector.]	The euthanasia of small animals that are found as hitchhiker pests at the border is not a straightforward issue to deal with. Despite their small size these animals may be wild and therefore dangerous, scared, injured, or fractious. Other species may have quills, scales or spines that are dangerous or poisonous. The most humane methods may endanger the handler or person who is carrying out the euthanasia because of the need to get close enough to handle the animal and deliver the method of euthanasia. In addition, the health status of the animal is usually unknown and therefore extreme care must be taken when dispatching the animal. Nevertheless, euthanasia must be carried out as painlessly and quickly as possible. Several different methods of euthanasia are available, but their use will depend on the type and nature of the animal and the situation. The following is recommended: 1. The hitchhiker animal should be secured in a container such as a bag, cage, sack, or box etc. which can be held in safe custody and which will aid the process of euthanasia. 2. The preferred option is for an MPI veterinarian to carry out the euthanasia process. An MPI veterinarian may choose other acceptable euthanasia options to those mentioned here, for example injection with suitable barbiturates. 3. In the absence of an MPI veterinarian, any other registered MPI-approved veterinarian may undertake the euthanasia process provided and the euthanasia is performed in the presence of an Inspector. In these situations, the Inspector may have to retrieve the dead animal for incineration. 4. **If a veterinarian is not available, an Inspector is to undertake the euthanasia process as mentioned below**.

Reason for Treatment	Requirement	Short Code	Treatment Procedure to follow	Comments
Amphibians (e.g., frogs), Fish and Reptiles (e.g., lizards)	Euthanasia **by cold**	LAT1	Place in a refrigerator for a period of 5 hrs to induce torpor then in a freezer for 24 hrs.	See **Note 1** for hitchhiker/illegal imports
	Euthanasia by carbon monoxide gas	LAT3	The use of carbon monoxide is a very efficient method for euthanasia of smaller species as it is painless and is a quick method of death. It is highly recommended that compressed carbon monoxide from a tank is used by an experienced operator. **Do not use exhaust fumes of a car.** It is also useful for large numbers e.g., many one-day old chicks. If there are safe facilities where the animals can be placed within a cage and exposed to carbon monoxide and personnel are trained in its use, this gas would be the method of destruction.	

Reason for Treatment	Requirement	Short Code	Treatment Procedure to follow	Comments
			Note that some amphibians and reptiles can hold their breath for long periods, and therefore to ensure death has occurred, contain the animal for 24 hr.	
	Euthanasia by treatment at commodity specific rate	LAT1a	If an amphibian or reptile hitchhiker is sighted but cannot be captured, fumigation with MeBr may be required for the whole area and commodity where it was sighted. Use the commodity specific rate (except for fresh produce and nursery stock).	
Small Mammals (e.g., rodents) and Birds	Euthanasia by concussion	LAT2	Refer to an approved veterinarian or consult MPI. If an approved veterinarian is not available or obtaining rapid MPI feedback is not practical, concussion by a blunt instrument followed by decapitation may be used. Concussion as a method should be used only as the last resort.	See **Note 1** for hitchhiker/illegal imports. Reference FAO 79
	Euthanasia by carbon monoxide gas	LAT3		
	Euthanasia by gas	LAT4	If a small hitchhiker animal is sighted but cannot be captured, fumigation of the whole area and commodity where the animal was sighted may be required. For a rodent, fumigate with Methyl bromide at 4 g/m^3 for 5 hrs at 10°C minimum and fan for first 20 minutes (mins) other wise use the commodity specific rate. Hydrogen cyanide 4 g/m^3 for 6 hrs at 4°C and above may be able to be used where penetration and adsorption are not an issue.	FAO 54
	Bait	LAT5	When rodents are found on aircraft a treatment applicator needs to carry out a baiting programme as directed by MPI. Approved applicators of residual disinsection used by the airline may be able to provide service or other pest eradication providers can be used if access to airside aircraft is possible.	

Notes:
Note 1: Before euthanasia, check with Department of Conservation (DOC) endangered species list (for example, if it's on CITES list)

1.2 Inedible Animal Products

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Animal Products and Non-Viable Dried Invertebrate Specimens (e.g., dead insect collections)	Insects (Insecta) and ticks – not including Dermestidae	IAP1	Fumigate with MeBr at 48 g/m^3 for 3 hrs at Vac: 91 kPa if at 21-26°C; **or**	MPI STD; ANIEQPIC.ALL	Fan circulation minimum 20 mins at start of fumigation
			Fumigate with MeBr at 56 g/m^3 for 3 hrs at Vac: 91 kPa if at 16-20°C; **or**		
			Fumigate with MeBr at 64 g/m^3 for 3 hrs at Vac: 91 kPa if at 10-15°C **or**		
		EAP1			
		SPT1			
	Ants (excluding other insects)	VCE1d			
	Mites (Arachnids)	IAP2	Fumigate **twice** with MeBr at 48 g/m^3 for 3 hrs at Vac: 91 kPa if at 21-26°C. The second fumigation must be 12-14 days after the first, **or**	MPI	After the first fumigation, hold securely in plastic bags and re-fumigate after 12-14 days, or if mite is non- regulated release.
			Fumigate twice with MeBr at 56 g/m^3 for 3 hrs at Vac: 91 kPa if at 16-20°C. The second fumigation must be 12-14 days after the first, **or**		
			Fumigate twice with MeBr at 64 g/m^3 for 3 hrs at Vac: 91 kPa if at 10-15°C. The second fumigation must be 12-14 days after the first.		
		EAP1			
		SPT1			
	Dermestidae including *Trogoderma* spp.	SPT3			
Animal fibre	Mandatory	IAP3	See ANIFIBRE.ALL	MPI STD; ANIFIBRE.ALL	Follow IHS and/or import permit

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Wool packs - used	All used wool packs must be heat treated.	IAP6	See ANIFIBRE.ALL	MPI STD; ANIFIBRE.ALL	
Fibre (i.e., sheep, goats, yaks, camels, alpacas, and llamas) **for private use** (up to 20kg)	Contaminated or unprocessed	IAP7	Gamma irradiated at a dose of 25 kGy or 2.5 Mrad; **or**	MPI STD; ANIFIBRE.ALL	All packaging, semi-solid and solid waste associated with animal fibre is treated, destroyed, or disposed of by: • Incineration; **or** • Autoclaving (at least 120°C for at least 30 mins); **or** Deep burial.
			Autoclaved at 120°C for at least 30 mins; **or**		
			Heated to 85°C at 40% relative humidity for at least 15 hours; **or**		
			Fumigated with formalin (37% formaldehyde) at 50 mL/m^3 mixed with potassium permanganate 35 g/m^3 at 80-90% humidity in a sealed container for 24 hours (Note: This option is only for fibre with no embedded seeds).		
	Insects	IAP5	Autoclaved at 120°C for at least 30 mins; **or**		
			Heated to 85°C at 40% relative humidity for at least 15 hours;		
		IAP1			
		IAP2			
		SPT1			
Ornamental animal products of animal origin (e.g., blown eggs, drums, game trophies, skins) Ornamental animal products of animal origin (e.g., blown	Where treatment is required (except for insects)	IAP8	Fumigate with Formalin at 20 mL/m^3 and 16 g/m^3 potassium permanganate for 8 hrs at Atm, 18°C, 80-90% relative humidity; Note: if the item is over 32 mm thick then add 1 hour per extra 4 mm thickness for formalin treatment. **or**	Personal Consignments of Animal Products - Import Health Standard (mpi.govt.nz) Specified Animal Products (mpi.govt.nz)	Items must be unpacked, and any contamination cleaned off to completely expose the goods for formalin treatment. All contaminated material that has been removed from the items must be treated or disposed of by:

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
eggs, drums, game trophies, skins)			Spray with 10% solution of formalin in airtight container at 18°C for 8 hrs: **or**		- Incineration; **or** **-** Autoclaving (at least 120˚C for at least 30 mins)
	Where treatment is required (including insects)		**Irradiate** at 50 kGy		
	Ants (excluding other insects)	VCE1d			
	Insects	SPT1			
	Mites	EAP2			
		NST6	Only Phosphine + CO_2 + MeBr option		
	Seed contamination	IAP10	Remove contamination		
		SPT4	Heat treatment option only		
Game trophies (e.g., antlers, beaks, bones, claws, hooves, horns, skulls, teeth, and tusks)	Extraneous organic material, pest infestation, and evidence of decay on arrival	IAP8a	Boil in water at a minimum temperature of 100°C for a minimum of 30 minutes.		
Feathers on handicrafts, artefacts, fly tying etc.	Visibly contaminated	IAP9	Fumigate by mixing formalin 27 mL/m^3 with 16 g/m^3 potassium permanganate for 8 hrs at Atm, 18°C, 80-90% relative humidity; **or**	MPI STD; ANIFIBRE.ALL Terrestrial Code Online Access - WOAH - World Organisation for Animal Health	
			Fumigate by mixing formalin 27 mL/m^3 with 106 mL/m^3 of water, heated to boil off with timer power off, items kept in the sealed container for 8 hours, temperature greater than 15°C, 60-90% relative humidity; **or**		
			Irradiate at 20 kGy		
	Ants (excluding other insects)	VC1d			
	Insects	SPT1			

1.3 Edible Animal Products

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Approved Animal Products for human consumption (e.g., dried fish, milk powder, meat floss, stock cubes etc.)	Ants (excluding other insects)	VCE1d			
	Insects (except Dermestidae and ticks)	EAP1	Fumigate with MeBr at 64 g/m^3 for 3 hrs at Vac: 91 kPa at 10-15°C; **or**	FAO 79	Fan circulation minimum 20 mins at start of fumigation
			Fumigate with MeBr at 56 g/m^3 for 3 hrs at Vac: 91 kPa at 16-20°C; **or**		
			Fumigate with MeBr at 48 g/m^3 for 3 hrs at Vac: 91 kPa at 21-26°C; **or**		
			Autoclave at 100 KPa Pressure for 30 mins at 120°C	FAO 50	
		SPT1			
	Mites (Arachnids) as unwanted hitchhikers	EAP2	Fumigate **twice** with MeBr using one of the fumigation options in EAP1. The second fumigation must be 12-14 days after the first.	MPI	After the first fumigation, hold securely in plastic bags and re-fumigate after 12-14 days
	Dermestidae and ticks	SPT2		FAO 79	
	Trogoderma spp.	SPT3		FAO 50	

1.4 Equipment used with Animals or Water

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Used equipment associated with terrestrial animals including equine and birds	Dermestidae, Insects, mites, Ticks, *Trogoderma* spp.	EAP1	Use one option from the selection of treatments depending on the equipment and the pest.		Applies to all used animal equipment contaminated with insects unless being heat treated or frozen.
		EAP2			
		SPT2			
		SPT3			
		VCE1a			
	Ants (excluding other insects)	VCE1d			
Used equipment associated with terrestrial animals (NOT including equine or birds)	Wet and/or visibly contaminated	EAP5	Washed or cleaned to remove any visible contamination; **and** Disinfected with an agent listed in the MPI *List of Approved Disinfectants for General Transitional Facilities for Uncleared Goods* (*Note*: dog and cat used equipment contaminated only with hair or fur does not require disinfection)	MPI STD; ANIEQUIP.ALL	Note this includes animal bedding or apparel NOT accompanying an animal. Animal bedding accompanying an animal is not eligible for clearance and must be disposed of as biosecurity waste.
Used equipment associated with equine animals	Wet and/or visibly contaminated	EAP5a	Washed thoroughly using a standard detergent; **or**	MPI STD; ANIEQUIP.ALL	Choice of treatment depends on treatment availability and the tolerance of the item to be treated.
			Clean and treat with a disinfectant listed in the MPI *List of Approved Disinfectants for General Transitional Facilities for Uncleared Goods*; **or**		
			Fumigate with 10% formaldehyde (approximately 30% formalin) for 8 hours; **or**		
			Heat to a temperature of at least 60°C for at least 10 mins.		
Used equipment associated with birds	Mandatory		Wash thoroughly using a standard detergent and treat with a disinfectant listed in the MPI *List of Approved Disinfectants for General Transitional Facilities for Uncleared Goods*; **or**	MPI STD; ANIEQUIP.ALL	

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
			Fumigate with 10% formaldehyde (approximately 30% formalin) for 8 hours.		
Used equipment associated with marine aquatic animals or activities and aquaculture equipment	Wet and/or visibly contaminated	EAP5b	Soak the equipment in water kept above 60°C for at least 1 minute **or**	MPI STD; ANIEQUIP.ALL	Clean and dry equipment does not require treatment.
			Soak the equipment to a point when all absorbent areas of the item have been saturated with a solution of 5% volume/volume concentration of dishwashing detergent, nappy cleaner antiseptic hand cleaner (chlorhexidine or chloroxylenol based), THEN treated on all surfaces with this solution for at least 1 minute; **or**		
			Soak the equipment for 10 mins in, or if a hard surface wiped with, iodine solution at 250 mg per litre (Betadine ®); **or**		
			Soak the equipment for 10 mins in, or if a hard surface wiped with, household bleach at 50 mg NaOCl per litre; **or**		
			Soak the equipment for 10 mins in, or if a hard surface wiped with, sodium hydroxide solution consisting of 1% hydroxide and 0.1% Teepol ®.		
Used equipment associated with freshwater aquatic animals or activities **(not including adsorbent material such as felt-soled footwear)**	Wet and/or visibly contaminated	EAP5c	Freeze until completely solid; **or**	MPI STD; ANIEQUIP.ALL	Clean and dry equipment does not require treatment.
			Soak the equipment in a solution of 5% volume/volume of either dishwashing detergent, nappy cleaner, antiseptic hand cleaner (chlorhexidine or chloroxylenol based) or salt (NaCl) for at least 1 minute (a 5% solution is 500 mL or 2 cups with water added to make 10 L); **or**		
			Soak in water kept above 45°C (uncomfortable to the touch) for at least 20 mins; **or** Soak in water kept above 60°C for at least 1 minute; **or**		
			Soak in a household bleach solution with a minimum concentration of 2% (200 mL of bleach to 10 L of water) for at least 1 minute.		
Used equipment containing absorbent	Wet and/or visibly contaminated	EAP5d	Freeze the equipment until completely solid; **or**	MPI STD; ANIEQUIP.ALL	Clean and dry equipment does not require treatment.

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
material **(other than felt soles)**			Soak the equipment to a point when all absorbent areas of the item have been saturated with a solution of 5% volume/volume concentration of dishwashing detergent, nappy cleaner antiseptic, hand cleaner (chlorhexidine or chloroxylenol based) or salt (NaCl), THEN treated on all surfaces with this solution for at least 1 minute; **or**		
			Soaking the equipment to a point when all absorbent areas of the item have been saturated with a solution of 2% volume/volume concentration of household bleach, THEN treated on all surfaces with this solution for at least 1 minute; **or**		
			Soak the equipment to a point when all absorbent areas of the item have been saturated with water kept above 45°C, THEN treated on all surfaces with a soak of at least 20 mins in water kept above 45°C; **or**		
			Soak the equipment to a point when all absorbent areas of the item have been saturated with water kept above water at no less than 60°C, THEN treated on all surfaces with water kept above 60°C for at least one minute.		
Used felt-soled fishing footwear (i.e., waders and boots)	If the footwear is not dry to the touch or has been used within the last 2 months	EAP5e	Freeze the entire felt sole until completely solid; **or**	MPI STD; ANIEQUIP.ALL	
			Completely immerse the entire felt sole in water kept above 45°C containing 5% volume/volume concentration of dishwashing detergent or nappy cleaner for at least 30 mins; **or**		
			Completely immerse the entire felt sole in water kept above 45°C for at least 40 mins		
Vehicles, Used Machinery, Parts etc. associated with animals					see Section 1.12

1.5 Forest Products

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	CT/ Pressure	Initial dose	Minimum end point	Temp. °C	Time	Source	Comments
Woodware, Wood panels, Sawdust, Wood Chips, Wood Shavings, Wood Wool, Wood (up to 300 mm in thickness or cross-section); and Other miscellaneous products e.g., pine/conifer cones, needles, twigs, smudge sticks etc. See **Note 4**	Invertebrates excluding ants	FPT1	MeBr **or**	631	48 g/m^3	14.4 g/m^3 (30%)	21+	24 hrs	MPI	The treatment must achieve the CT product, minimum concentration, temperature, and time listed. Fan 20 mins at the start, filleted 5mm every 200mm. Plastic wrapping opened or perforated, wood must not be painted or lacquered on all surfaces.
				841	64 g/m^3	19.2 g/m^3 (30%)	16-20			
				1052	80 g/m^3	24 g/m^3 (30%)	10-15			
			MeBr **or**	Vacuum		64 g/m^3	10 +	4 hrs	MPI	
			Phosphine **or**			200 ppm minimum	21-25	9 days	MPI	Top-up needed to maintain concentration due to sorption by wood. See **Note 7** below.
							16-20	12 days		
							10-15	15 days		
			HT **or**				56 +	30 mins	ISPM 15	
			Freezing				-18	7 days	Rust & Reierson 1998	Core temperature. See **Note 2** below.
	Ants (excluding other insects)	VCE1d								
	Fungi, Extraneous organic material and Devitalisation	FPT2	HT **or**				70	4 hrs		Core temperature. Not for seed devitalisation See **Note 3** below.
			Incineration **or**	Incinerate to ash at an MPI- approved facility or carried out under supervision by MPI						Transport risk items to treatment site in pest-proof containers, e.g.,
			Autoclaving **or**	100 kPa			120	30 mins	MPI	

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	CT/ Pressure	Initial dose	Minimum end point	Temp. °C	Time	Source	Comments
Woodware, Wood panels, Sawdust, Wood Chips, Wood Shavings, Wood Wool, Wood (up to 300 mm in thickness or cross-section); and Other miscellaneous products e.g., pine/conifer cones, needles, twigs, smudge sticks etc. See **Note 4**			Irradiation			PPT2				completely wrapped with plastic.
	Extraneous organic material	FPT3	Decontaminate by sweeping and/or washing off and to be collected and destroyed in an approved manner.							
	Pathogens (including fungi), Extraneous organic material (e.g., leaves, twigs, soil), Insects, Devitalisation (e.g., unprocessed burls) **Note**: Not for seed devitalisation	FPT4	HT	**Core temperature** or			**Temp. ^{0}C**	**Time**	MPI Ramsfield et al 2010, Chidester 1956, CTO Plants Direction 20170022	If not measuring **core temperature**, use the **chamber temperature** schedule in combination with the thickness between fillets/stickers. Unprocessed burls and potentially viable materials, in particular, must be rendered nonviable (devitalisation) Note: maintain 90%+ humidity to prevent warping and quicker penetration of heat.
							70	4 hrs **or**		
							80	2 hrs **or**		
							90	1 hr **or**		
							100	30 mins **or**		
							110	20 mins **or**		
							120	15 mins		
				Chamber temperature with wood thickness		**Wood thickness**	**Temp. ^{0}C**	**Time**		
						0-25 mm	70	4hrs		
						25-38 mm	70	5 hrs		
						38-50 mm	70	6 hrs		
						50-75 mm	70	8 hrs		
						75-100 mm	70	10 hrs		
						100-150 mm	70	14 hrs		
						150-200 mm	70	18 hrs		
						200-250 mm	70	22 hrs		
						250 mm+	70	26 hrs		

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	CT/ Pressure	Initial dose	Minimum end point	Temp. °C	Time	Source	Comments
Woody items for human consumption (kava sticks, cinnamon bark etc.)	Insects	SPT1								
Wood Packaging (as defined in the Wood Packaging Import Health Standard)	ISPM15 Compliance **or** Invertebrates (For Fungi use FPT3a, FPT2 or FPT4)	ISPM15	HT **or**	Kiln-drying, chemical pressure impregnation or other treatments may be used as a means of achieving heat treatment provided that the above temperature and time requirements are met.			56	30 mins	MPI STD; Wood Packaging: ISPM 15	All wood packaging material must achieve a minimum temperature of 56°C throughout the entire profile of the wood (including at its core) for duration of at least 30 mins.
			MeBr **or**	650	48 g/m^3	24 g/m^3 (50%)	21 +	24 hrs	ISPM 15	20 mins of fan at the start, filleted or otherwise separate layers by at least 5mm every 200mm.
				800	56 g/m^3	28 g/m^3 (50%)	16-20.9			
				900	64 g/m^3	32 g/m^3 (50%)	10-15.9			
		FPT1	Phosphine							Note: Not approved to be ISPM15 stamped
Bamboo, Cane, Rattan, Willow and Bark (includes wood items containing bark, bark chips, cork, bark pencils and other items containing unprocessed bark)	Insects See **Note 22** for ants.	FPT5	MeBr **or**	631	48 g/m^3	14.4 g/m^3 (30%)	21-25	24 hrs	Barak et al 2009 quote the I -Bamboo options	The treatment must achieve the CT product, minimum concentration, temperature, and time listed. Fan circulation minimum 20 mins at start of fumigation. Plastic wrapping opened or perforated, must have an air gap between the bottom bundle and the floor.
				736	56 g/m^3	16.8 g/m^3 (30%)	16-20			
				841	64 g/m^3	19.2 g/m^3 (30%)	12-15			
				945	72 g/m^3	21.6 g/m^3 (30%)	10-11			
				Vac		64 g/m^3	10+	24 hrs		

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	CT/ Pressure	Initial dose	Minimum end point	Temp. °C	Time	Source	Comments
			HT				56	30 mins	ISPM 15	
	Invertebrates, Pathogens, Extraneous organic material	FPT4	HT							Note: maintain 90%+ humidity to prevent warping and achieves quicker penetration of heat. See **Note 3**.
Poles, Piles, Rounds, And Wood greater than 300 mm in thickness or cross-section.	Invertebrates	FPT6	MeBr	4700	160 g/m^3	40 g/m^3 (25%)	10-15 +	48 hrs	Scheffrahn et al 1965, Cross 1992	The treatment must achieve the CT product, minimum concentration, temperature, and time listed. Must be filleted every layer for large dimension timber (> 200mm in thickness).
				3525	120 g/m^3	30 g/m^3 (25%)	16 +			
	Invertebrates, Pathogens, Extraneous organic material	FPT4	HT							Note: maintain 90%+ humidity to prevent warping and achieves quicker penetration of heat. See **Note 3**.
Sleepers	Invertebrates, Pathogens, Extraneous organic material	FPT4	HT						MPI Pole, Piles, Rounds and Sleepers	Must be filleted every layer.

Commodity/Product	Reason for treatment	Short code	Treatment	Comment
Wooden decking (associated with used vehicles etc.)	Fungi in wooden decking	Refer to Commodity/Product "Vehicles, machinery, containers, parts, equipment (not used with animals), tyres etc." for treatment options against fungi found in used wooden decking associated with imported used vehicles, trucks, and utilities. However, if fungal rot has set in and wood decay is obvious, the wooden decking must be heat treated or removed and destroyed.		
All Forest Produce for Destruction				
	Disease: Fungi, Virus, Bacteria	FPT3a	Deep burial at an MPI approved commercial landfill or other approved MPI approved site. Must be buried deep enough to allow a minimum of 2 metres land-fill coverage. After unloading, the goods are covered immediately.	Risk items must be transported as per direction from MPI. An MPI inspector is required to supervise the deep burial process.
	Fruit fly host material	FPT3b	Bagged and placed in a MPI Quarantine Waste bin (as specified in MPI standard in TF Gen for waste disposal) for the destruction of biosecurity waste.	
Note 2: Freezing could cause damage to objects made of layers such as paintings, lacquer ware, photographs, and ivory. Objects of one material such as wood or paper, are the best candidates for freezing. Self-defrosting freezers to be avoided as freezer types don't maintain a steady temperature. When removing from the freezer, leave it in the bag and wrap it so it will reach room temperature slowly. **Note 3**: It takes time for the core temperature of forest produce to reach 70°C. If it is not possible to measure the core temperature accurately, use the sliding scale for HT shown in FPT4; that is, with increased thickness of wood the exposure time must be increased. **Note 4**: The Forest Produce items listed in the commodity/product column are defined as per the relevant Import Health Standard.				

1.6 Stored Products

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Interception Treatments for Stored Products									
General Stored Products in bags & cartons only up to 50kg. See **Note 5** below. *(Refer below for additional treatments of specific stored product items)*	Insects (Insecta) **except** *Trogoderma* spp.	SPT1	MeBr **or**		32 g/m^3	21 +	24 hrs	FAO 79	Fan circulation minimum 20 mins at start of fumigation. See **Note 22** for ants.
					40 g/m^3	16-20			
					48 g/m^3	10-15			
				Vac:91 kPa	32 g/m^3	21 +	3 hrs		
					40 g/m^3	16-20			
					48 g/m^3	10-15			
			Phosphine **or**		2 g/m^3	10-15	15 days	MPI	One day less can be subtracted for cylindered or generated phosphine. See **Note 7.**
						16-20	12 days		
						21-25	9 days		
						26 + (max 35)	5 days		
			Freezing **or**			-18 or less	7 days	MPI	
			HT			56 +	30 mins	MPI	The core temperature of product must reach 56°C
Bulk containerised stored products, 50kg plus See **Note 6** below. *(Refer below for additional treatments of specific stored product items)*	Insects (Insecta) **except** *Trogoderma* spp.	SPT2	MeBr **or**		48 g/m^3	21 +	24 hrs	FAO 79	Fan circulation minimum 20 mins at start of fumigation. See **Note 22** for ants.
					64 g/m^3	16-20			
					80 g/m^3	10-15			
			Phosphine **or**		2 g/m^3	10-15	15 days	MPI	One day less can be subtracted for cylindered or generated phosphine. See **Note 7.**
						16-20	12 days		
						21-25	9 days		
						26 + (max 35)	5 days		

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
			HT **or**			60 +	10 mins	MPI	The core temperature of product must reach 60°C.
			Freezing			-18 or less	7 days	MPI	Core temperature
General Stored Products in bags & cartons, and bulk containerised See **Note 6** below.	*Trogoderma* spp. only	SPT3	MeBr **or**		40 g/m^3	32 +	12 hrs	FAO 50	Fan circulation minimum 20 mins at start of fumigation.
					56 g/m^3	27-31			
					72 g/m^3	21-26			
					96 g/m^3	16-20			
					120 g/m^3	10-15			
			HT			60 +	30 mins	MPI	The core temperature of product must reach 60°C.
General Stored Products in bags & cartons, and bulk containerised See **Note 5 below**.	Devitalisation, Fungi	SPT4	HT **or**	40% RH (min)		85	15 hrs	FAO 50	Destroys viability e.g., of seeds, nuts, and pathogens. Will also kill insects including *Trogoderma* spp.
			Autoclave	Pres:100 kPa		120	30 mins	FAO 50	
General Stored Products in bags & cartons	Mites	SPT5	MeBr		32 g/m^3	21 +	24 hrs	MPI	Re-fumigate after 12-14 days.
					40 g/m^3	16-20			
					48 g/m^3	10-15			
Stored products; bulk containers	Mites	SPT6	MeBr		48 g/m^3	21 +	24 hrs	MPI	Re-fumigate after 12-14 days. See **Note 6** below.
					64 g/m^3	16-20			
					80 g/m^3	10-15			
Citrus Products (including dried peel and dried citrus belonging to genera	Bacteria, micro-organisms	SPT7	HT **or**	40% RH (min)		85	8 hrs	MPI	Treatment kills pathogens
			Autoclave	Pres:100 kPa		120	30 mins	MPI	

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Citrus, *Fortunella* & *Poncirus)* Dried herbs and leaves									
Stock food (plant derived animal feed)	Devitalisation/ Pathogens	SPT8	HT **or**	40% RH (min)		85	15 hr	MPI	Destroys viability e.g., of seed and pathogens
			Autoclave **or**	Pres:100 kPa		120	30 mins	MPI	
			Irradiation		25 kGy			Marsh et al 2005	
	Insects	SPT2	MeBr						
	Trogoderma spp. Only	SPT3	MeBr						
Nuts	Insects	SPT9	MeBr		16 g/m^3	21	12 hr	MPI	
				Vac 91kPa	48 g/m^3	21	1 hr	MPI	
Nuts	Devitalisation	SPT4							
Plant products	Devitalisation	SPT10	Grinding						No whole seeds remaining
Coffee/Cocoa Beans	Insects	SPT11	CO_2		Min 35%	15	15 days	MPI	Use SPT1 for all sizes of bags where coffee and cocoa beans are packed in hessian or woven bags with no plastic liners. Alternatively, slash bags to allow fumigant penetration
		SPT1							
Stored Products for destruction									
General Stored Products	Disease, Fungi, Virus, Bacteria	FPT3a or FPT3b							

Note 5: Stored products (in bags and cartons and in bulk) refers to **dried** vegetable, fruit, grain, seed, edible nuts, etc. imported for human consumption, processing or stock food. Stored products do **not** include fresh fruit and vegetables.

Note 6: High MeBr dosages may not be acceptable on products for human consumption, consult MPI Food Standards.

Note 7: Phosphine dosage is active ingredient (normally 1/3 of pellet or tablet) not weight of product applied.

1.7 Plant Products

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Source	Comments
All Plant Products including broom millet, corn dollies, dried flowers & foliage, dried grapevine, millet spray, straw, etc.	Devitalisation (plant & seed) and Pathogens (e.g., fungi, bacteria)	SPT4			FAO 50 Dried Plant Material IHS	Destroys viability (e.g., plant & seed) and kills fungi, bacteria etc. Autoclaving appropriate for *Nostoc commune*.
	Insects (Insecta) **except** *Trogoderma* spp.	SPT1				
	Trogoderma spp. only	SPT3				
Plant Products **not** for human consumption (applies only to products in IHS's where this treatment is stated as an option)	Renders incapable of procreation (e.g., seed, Arthropods, pathogens etc.)	PPT2	Irradiation	25 kGy	MPI	
Brushwood Group 1 as per IHS	Devitalisation and Pathogens	SPT4			Dried Plant Material IHS	
		PPT2				
Brushwood Group 2 as per IHS	Regulated pests	FPT5				
		PPT2				
Mosses & Lichens	Devitalisation	SPT4				
Plant Products for destruction						
All plant products including broom millet, corn dollies, dried flowers and foliage, millet spray, straw etc.	Disease: Fungi, Virus, Bacteria	FPT3a				
		FPT3b				

1.8 Nursery Stock

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active ingredient (a.i.)	Application Rate (g a.i./L)	Time	Source	Comments
All whole plants and cuttings (e.g., leafless and/or dormant cuttings, scions, bud wood, marcots, off-shoots)	Insects (Insecta) only	NST1	Apply **two** active ingredients via spraying or dipping, **one organophosphate** and **one from another different chemical group** listed below.				MPI	Dip/spray at room temperature. Refer to pesticide label to check the need for surfactants, the suitability for specific species and the use on dormant or non-dormant material. See **Note 8** Suitable as a treatment option for cuttings as per Section 2.2.1.6 of the Nursery stock IHS, schedule 3 of Citrus, Persea and Prunus Plants for Planting IHSs
			Organophosphate	Acephate	0.75	2-5 mins		
				Chlorpyrifos	0.8			
				Dimethoate	0.5 to 1.9			
				Malathion	1.5			
				Pirimiphos-methyl	0.475			
			Carbamate	Carbaryl	1.2			
			Diamide	Cyantraniliprole	0.15			
			Diacylhydrazine	Tebufenozide	0.06			
			Neonicotinoid	Imidacloprid	0.16			
				Thiacloprid	0.16			
			Synthetic pyrethroid	Deltamethrin	0.025	15 mins		
				Esfenvalerate	0.03			
				Fenvalerate	0.03			
				Lambda-cyhalothrin	0.05			
			Spinosyns	Spinosad	0.048	2-5 mins		

Note 8: The above contact and systemic insecticidal dips may be used instead of fumigation but only if the packaging material is separately fumigated (FVT1) or destroyed. Two chemicals must be used for any treatment, one organophosphate and one other insecticide. For dipping plants are to be immersed completely for the specified duration, the treatment time is normally 2 mins (except those requiring 15 mins) but must be increased to 5 mins if bubbles remain present on the plant surface. Dip solutions must be used no more than twice or as per manufacturer's recommendations. For spraying, all surfaces must be sprayed to runoff (duration does not apply in that case). The chemicals, if compatible, may be combined as a single treatment.

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active Ingredient (a.i.)	Dosage			Temp. (°C)	Time	Source	Comments
All whole plants and cuttings (e.g., leafless and/or dormant cuttings, scions, bud wood, marcots, off-shoots)	Insects only (excluding mites)	NST2	MeBr		**CT**	**Initial dose**	**Minimum end point**				The treatment must achieve the CT product, minimum concentration, temperature, and time listed. Packaging to be dipped as per NST3 or NST6 option 2 or fumigated as per FVT1 or destroyed. See **Note 22** for ants and **Note 9**.
					74	48 g/m^3	28.8 g/m^3	10-15	2 hrs		
					62	40 g/m^3	24 g/m^3	16-20	2 hrs		
					50	32 g/m^3	19.2 g/m^3	21-27	2 hrs		
					37.2	28 g/m^3	14.4 g/m^3	28-32	2 hrs		
		NST6									
	Insects only (excluding mites)	NST3	Hot water treatment/chemical treatment: immersion in hot water at a constant temperature of 24˚C for 2 hours, followed by immersion in hot water at a constant temperature of 45˚C for 3 hours (period required at the stated temperatures excluding warm-up times). Immersion in chlorpyrifos dip (2.4g a.i. per litre of dip) containing a non-ionic surfactant (if required on label) for 2 minutes with agitation. The treatment time must be increased to 5 minutes if bubbles remain present on the bulb surface. The dip solution must be used no more than twice or as per manufacturer's recommendations. The chlorpyrifos dip may be incorporated in the hot water treatment.								Packaging to be dipped as per NST3 or NST6 option 2 or fumigated as per FVT1 or destroyed.
	Spiders	NST4	Chlorpyrifos		2.4 g a.i./L				2 mins		
	Molluscs	NST5	Methiocarb		0.75 g a.i./L				5 mins		
	For interceptions on arrival: 1) Insects, mites, spiders	NST2									
		NST6	(1) Phosphine + CO_2 + MeBr or		3 g/m^3 + 5% CO_2 + 13 g/m^3			15	4 hrs	Kawakami et al 1996	Add the MeBr into chamber directly after the PH_3/CO_2 mix (ECO2FUME [tm]) has been added.
			(1) Phosphine + CO_2 + MeBr		3 g/m^3 + 5% CO_2 + 13 g/m^3			20	3 hrs		
		NST6	(2) Organophosphate	Acephate	0.75 g a.i./L				2-5 mins		Dip/spray at room temperature. Refer to
			(2) Organophosphate	Chlorpyrifos	2.4 g a.i./L				2-5 mins		

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active Ingredient (a.i.)	Dosage			Temp. (°C)	Time	Source	Comments
All whole plants and cuttings (e.g., leafless and/or dormant cuttings, scions, bud wood, marcots, off-shoots)	Or For interceptions on arrival: (2) Insects only		(2) Organophosphate	Dimethoate	0.65 g a.i./L				2-5 mins		pesticide label to check the need for surfactants, the suitability for specific species and the use on dormant or non-dormant material.
			(2) Organophosphate	Pirimiphos-methyl	0.475 g a.i./L				2-5 mins		
	Mites and Insects (on dormant plant material only)	NST12	MeBr		**CT**	**Initial dose**	**Minimum end point**			MPI IHS 155.02.06	The treatment must achieve the CT product, minimum concentration, temperature, and time listed.
					120	68 g/m^3	51 g/m^3	10-15	2 hrs		
					100	57 g/m^3	43 g/m^3	16-20			
					85	48 g/m^3	36 g/m^3	21-27			
					70	40 g/m^3	30 g/m^3	28-32			
					120	56 g/m^3	41 g/m^3	10-15	2.5 hrs		
					100	48 g/m^3	35 g/m^3	16-20			
					85	40 g/m^3	29 g/m^3	21-27			
					70	32 g/m^3	23 g/m^3	28-32			
					120	48 g/m^3	34 g/m^3	10-15	3 hrs		
					100	40 g/m^3	28 g/m^3	16-20			
					85	34 g/m^3	24 g/m^3	21-27			
					70	28 g/m^3	20 g/m^3	28-32			

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active ingredient (a.i.)	Application Rate (g a.i./L)	Time	Source	Comments
All whole plants and cuttings (e.g., leafless and/or dormant cuttings, scions, bud wood, marcots, off-shoots)	Mites (on dormant or non-dormant plant material)	NST13	Apply one of the following treatments (containing one or two active ingredients) via spraying or dipping				MPI	Dip/spray at room temperature. Time only applies to dip. Refer to pesticide label to check the need for surfactants, the suitability for specific species and use on dormant or non-dormant material. Suitable as a treatment option for cuttings as per Section 2.2.1.6 of the Nursery stock IHS, schedule 4 of Citrus, Persea and Prunus Plants for planting IHSs. See **Note 9** Packaging to be treated as NST13 or fumigated as NST12 or destroyed.
			Acequinocyl		0.15	2-5 mins		
			Chlorfenapyr		0.087			
			Abamectin + pyridaben		0.012 + 0.34			
			Abamectin + spiromesifen		0.012 + 0.152			
			Emamectin benzoate + pyridaben		0.002 + 0.34			
			Emamectin benzoate + spiromesifen		0.002 + 0.152			
			Fenazaquin + pyridaben		0.5 + 0.34			
			Fenazaquin + spiromesifen		0.5 + 0.152			
	Fungi	FNS8	If waiting for fungi identification plants can be treated as per FNS8 and directed to PEQ pending result. BSI must be informed of identification results. Further action may be required.					Packaging to be treated the same as the product or destroyed
	Bacteria/ Virus		Hold consignment. Following identification contact MPI.					
Dormant bulbs, corms, rhizomes, root divisions, and tubers	Insects (not mites)	NST7	Apply **two** active ingredients from different chemical groups below.					Packaging to be dipped per NST3 or NST6 option 2 or fumigated as per FVT1 or destroyed. Refer to pesticide label to check the need for surfactants. See **Note 22** for ants.
			Phenylpyrazole	Fipronil	0.2 g.ai./L	5 mins		
			Organophosphate	Pirimiphos-methyl	3.25 g a.i./L			
			Chloronicotinyl	Imidacloprid	1.26 g a.i./L			
		NST2						

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active ingredient (a.i.)	Application Rate (g a.i./L)	Time	Source	Comments
		NST3						
		NST6						
Dormant bulbs, corms, rhizomes, root divisions, and tubers	Nematodes	NST8	NST2 + immersion in Fenamiphos, 2 g a.i./L for 1 hour or				MPI IHS 155.02.06	Maximum of 2 times use or as per manufacturers' recommendations. Packaging to be dipped and fumigated as per NST8 or fumigated as per FVT9 or destroyed.
			Hot water at 44°C for 3 hr (pre warm at 24°C for 2 hr) + immersion in Fenamiphos, 2 g a.i./L for 1 hour					
	Mites	NST9	Hot water at 44°C for 3 hr (pre warm at 24°C for 2 hr).				MPI IHS 155.02.06	Packaging to be dipped as per NST13 or fumigated as per NST6 option 1 or destroyed.
		NST6						
	Fungi	NST10	Dip in sodium hypochlorite 10% a.i., pH 6.5-7 for 5 mins with agitation then pre warm at 24°C for 2 hrs then hot water at 45°C for 3 hrs, then immersion in thiabendazole dip (1-1.3 g a.i. per litre of dip) containing a wetting agent for 15-30 minutes with agitation. The dip solution must be used no more than twice or as per manufacturer's recommendations. The thiabendazole dip may be incorporated in the hot water treatment, **or**				MPI IHS 155.02.06	Dipped at room temp unless stated. Before **any** treatment is carried out, any bulbs with established infections are to be sorted & destroyed. **Packaging to be dipped as per NST10 or heat treated SPT4 or destroyed.**
			Dip in bromo-chloro-dimethylhydantoin, 8.1-16 g/L of dip for 5 min then pre warm at 24°C for 2 hr then hot water at 44°C for 3 hr then immersion in thiabendazole dip (1-1.3 g a.i. per litre of dip) containing a wetting agent for 15-30 minutes with agitation. The dip solution must be used no more than twice or as per manufacturer's recommendations. The thiabendazole dip may be incorporated in the hot water treatment, **or**					
			Dip in formaldehyde, 0.4% for 2 hrs then pre warm at 24°C for 2 hr then hot water at 44°C for 3 hrs then immersion in thiabendazole dip (1-1.3 g a.i. per litre of dip) containing a wetting agent for 15-30 minutes with agitation. The dip solution must					

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active ingredient (a.i.)	Application Rate (g a.i./L)	Time	Source	Comments
Dormant bulbs, corms, rhizomes, root divisions, and tubers	Fungi		be used no more than twice or as per manufacturer's recommendations. The thiabendazole dip may be incorporated in the hot water treatment, **or**					
			Dip in peroxyacetic acid, 80 ppm for 5 mins with wetting agent then pre warm at 24°C for 2 hr then hot water at 44°C for 3 hrs then immersion in thiabendazole dip (1-1.3 g a.i. per litre of dip) containing a wetting agent for 15-30 minutes with agitation. The dip solution must be used no more than twice or as per manufacturer's recommendations. The thiabendazole dip may be incorporated in the hot water treatment, **or**					
			Dip in chlorine-dioxide, 80 mg/L for 5 mins with agitation then pre warm at 24°C for 2 hr then hot water at 44°C for 3 hrs, then immersion in thiabendazole dip (1-1.3 g a.i. per litre of dip) containing a wetting agent for 15-30 minutes with agitation. The dip solution must be used no more than twice or as per manufacturer's recommendations. The thiabendazole dip may be incorporated in the hot water treatment, **or**					
			Dip in **two** active ingredients from different chemical groups below**.**					
			Benzimidazole (wetting agent required)	Thiabendazole	1-1.3 g a.i./L	15-30 mins	N MPI IHS 155.02.06	
			Benzimidazole	Thiophanate-methyl	0.75 g a.i./L	15-30 mins		
			Dimethyldithio-carbamate	Thiram	11.2 g a.i./L	15 mins		
			Imidazole	Prochloraz	0.25 g a.i./L	15 mins		
			Strobilurin	Azoxystrobin	0.95 g a.i./L	15 mins		
Truffles (*Tuber spp*.)	Insects	NST11	Sodium hypochlorite		100 mL/L of 5% a.i. bleach	30 mins		Rinse 3 times in fresh water after treatment

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active ingredient (a.i.)	Application Rate (g a.i./L)	Time	Source	Comments
Treatment requirements for nursery stock imported under part 3 of the IHS 155.02.06: Importation of Nursery Stock								
Dracaena (whole plants and non-dormant cuttings)	Scale (*Chrysomphalus aonidum*)	NST2					IHS 155.02.06	NST6 is not an option for *Dracaena*
		NST16	Apply **two** active ingredients from **two of the different chemical groups** listed below.			2-5 mins		On arrival treatment i) The foliage of imported plants or non-dormant cuttings must be treated on arrival. ii) The treatment must be repeated 10-14 days later in PEQ. See **Note 34.**
			Organophosphate	Acephate	0.75 g a.i./L			
				Dimethoate	0.3 g a.i./L			
			Carbamate	Carbaryl	1.2 g a.i./L			
			Buprofezin	Buprofezin	0.012 g a.i./L			
			Neonicotinoid	Thiacloprid	0.16 g a.i./L			
Nursery Stock for destruction								
All whole plants and cuttings e.g., cuttings, budwood, corms, dormant bulbs, marcots, offshoots, rhizomes, root divisions, scions, and tubers	Disease: Fungi, Virus, Bacteria	FPT3a						

Note 9: Chemical treatment may be used instead of fumigation but only if the packaging material is separately fumigated or destroyed. The plants must be sprayed/dipped using one of the chemical treatment options for insects and one of the chemical treatment's options for mites. Treatments may be in the form of spray, or preferably immerse the item in a dip(s) with agitation, according to the following conditions:

- Dipping - the treatment time is normally 2 mins but must be increased to 5 mins if bubbles remain present on the plant surface. Dip solutions must be used no more than twice or as per manufacturer's recommendations. All treatments must be carried out in accordance with manufacturer's recommendations using either the recommended label rate or the rates shown in the table above; **or**
- Spraying - all surfaces of the plant must be sprayed to the point of dripping (including the under surfaces of leaves).

Packing material (arriving with the plant) must be treated the same as the product or destroyed.

Note 34: Two active ingredients from two different chemical groups must be used for the two treatments. The foliage of the plants/non-dormant cuttings is to be immersed completely or all surfaces sprayed to runoff. For dipping, the treatment time is normally 2 mins, but must be increased to 5 mins if bubbles remain present on the plant surface. The chemicals, if compatible, may be combined as a single treatment. Dip solutions must be used no more than twice or as per manufacturer's recommendations.

1.9 Fresh Flowers and Foliage

Commodity/ Product	Reason for Treatment	Short code	Treatment/Chemical	Dosage	Temp. °C	Time	Source	Comments
Fresh Flowers and Foliage only	Snails (Mollusca excluding specified species); See below.	FNS4	MeBr	48 g/m^3	12 +	24 hrs	MPI	Fan circulation minimum 20 mins at start of fumigation. See **Note 10** and **Note 11**.
		NST5	Methiocarb					
	Giant African Snail, *Cernuella virgata & Cochicella acuta*	VCE2	The high dosages of MeBr which would be required here are likely to be phytotoxic to plants.					Fan circulation minimum 20 mins at start of fumigation.
	Mosses & Lichens	FNS5	Recondition consignment by removing all mosses and lichens for destruction.					The consignment must be re-inspected prior to release.
	Large hitchhikers such as worms		Hold consignment and following identification contact MPI.					100% inspection & removal may be an option.
	Only for ants, aphids, earwigs, moths, psocids, thrips	FNS6	Pestigas (pyrethrum **+** CO_2) **+** ECO2FUME (Phosphine **+** CO_2)	For rates & details refer **Note 12**	15 +	15 hrs	Approved by MPI	For requirement to re-inspect, see **Note 13**.
		NST6						
	Insects, mites, and spiders.	NST6						See **Note 9.**
		FVT1						See **Note 22** for ants and **Note 9.**
		FNS6	Extend the treatment to 24 hrs instead of 15 hours					
	Insects (Insecta) and slugs	FVT1						See **Note 22** for ants and **Note 9.**

Note 10: For MeBr fumigation of live plant material with leaves, maintain a high percentage of humidity (above 75 percent) in the chamber. Protect actively growing or delicate plants from the direct air flow of fans and do not enclose in plastic after fumigation.

Note 11: This MeBr treatment for snails on fresh flowers, foliage and nursery stock may be permitted only if a full re-inspection is conducted after the MeBr fumigation is completed and all the gas fully discharged. If live snails are found during the re-inspection, the whole consignment must be held and MPI notified immediately.

Note 12: Spray with Pestigas (synergised pyrethrum with carbon dioxide as a carrier gas) at 4.4 g/m^3 (within an airtight enclosure or fumigation cell) and hold for 10 mins. This is followed by a spray with ECO2FUME (Phosphine with carbon dioxide as a carrier gas) to give a concentration of 50 g a.i./m^3 of PH_3 and hold for 15 hours at a minimum air temperature of 15°C.

Note 13: From Jamieson 2005: If any live Arthropod pests different from those mentioned here are found during inspection, and the importer wishes to use this treatment option, leave some of the live pests in at least 5 (or as many as possible) of the cartons they were found in. Mark the cartons clearly so they can be easily identified. Following treatment inspect the marked cartons to

Commodity/ Product	Reason for Treatment	Short code	Treatment/Chemical	Dosage	Temp. °C	Time	Source	Comments
ensure all the pests concerned are killed and if the pests are killed, the consignment can be released. If the pests are alive, offer re-fumigation with Methyl bromide (if applicable) or re-ship/destroy etc. If insufficient Arthropod pests are "seeded", a full re-inspection is required. Notify MPI of the results.								

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active ingredient (a.i.)	Application Rate (g a.i./L)	Time	Source	Comments
Fresh Flowers and Foliage only	Insects (Insecta) only	FNS7	Apply **two** active ingredients from **two of the different chemical groups** listed below.					The contact and systemic insecticidal dips may be used instead of fumigation but only if the packaging material is separately fumigated or destroyed. These chemical dips are not acceptable on goods for human consumption. Plants are to be immersed completely in the chemicals. The chemicals, if compatible, may be combined as a single treatment. See **Note 14**.
			Contact insecticides: (Choose one, plus a systemic insecticide below)	Permethrin	0.025	15 mins	MPI STD 155.02.04	
				Pirimiphos-methyl	0.475	15 mins		
				Tau-fluvalinate	0.096	15 mins		
			Systemic insecticides: (Choose one, plus a contact insecticide)	Acephate	0.75	15 mins	MPI STD 155.02.04	
				Dimethoate	0.2	15 mins		
				Imidacloprid	0.15	15 mins		
			Optional: add mineral spraying oils or surfactants					
	Spiders	NST6						
		NST4						
	Fungi only	FNS8	Dip in chlorothalonil and thiophanate methyl or Other treatments as approved by MPI	Chlorothalonil **and** thiophanate-methyl	0.75 of each active ingredient	15 mins	MPI NZ Agri-chemical Manual	See **Note 14**. These fungicides may be used as treatment options against fungi especially since final identifications of fungi may take a long time. All plants to be treated are to be immersed completely in the chemicals.

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Active ingredient (a.i.)	Application Rate (g a.i./L)	Time	Source
Fresh Flowers and Foliage only	Devitalisation	FNS9	Immerse the stems etc. to within 50 mm of the flowers for 20 mins. The temperature should be a minimum of 15^{o}C, high enough to ensure transpiration is taking place to reduce viability	Glyphosate or	1.8	20 mins	
				Oryzalin	3.65		Blanchon et al 2012
Fresh Flowers and Foliage for destruction							
Fresh Flowers and Foliage only	Disease: Fungi, Virus, Bacteria	FPT3a					
		FPT3b					
Note 14: If a compatible (refer NZ Agrichemical Manual) adjuvant oil or a surfactant (improves wetting, penetration, adhesion) is used in the dip(s), the dipping time may be reduced from 15 mins to 5 mins, but all air bubbles must have dispersed from the flower/foliage surface; except for bulbs, corms, tubers and rhizomes when dipping time will remain 15 mins.							

1.10 Fresh Fruit and Vegetables

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
Fresh Fruit and Vegetables (Pineapples & Bananas see below). See **Notes 15** and **16** below. *(Refer below for additional treatments for some specified fruits and vegetables)*	Insects (**except** fruit flies) and slugs.	FVT1	MeBr **or**	48 g/m^3	10-15	2 hrs	FAO 79/ MPI/USDA 305a	Three pulp temperatures to be used to obtain cold spot then continuous monitoring of that pulp. Fan circulation minimum 20 mins at start of fumigation. Lower rate may be better for the produce. See **Note 26** below.
				40 g/m^3	16-21			
				32 g/m^3	22- 27			
				24 g/m^3	28-32			
			MeBr	35 g/m^3	10-15	3 hrs	Misumi 2009	
				26.5 g/m^3	16-21			
Grapes & Plums from Chile	Failed in transit cold treatment	FVT1c	MeBr	48 g/m^3	11-16	2 hrs	MPI	
				40 g/m^3	16-21			
Grapes from Australia, Chile, Italy and USA	Spiders (Araneae)	FVT8	MeBr	48 g/m^3	12 +	8 hrs	MPI - Zettler unpublished	Inner carton /box temperature to be used.
Grapes USA	Failed in transit cold treatment	FVT1b	MeBr	40 g/m^3	15.5+	2 hrs		
	Insects	FVT1						
Pomegranates	Spiders (Araneae)	FVT8						
Stone fruit USA	Failed in transit cold	FVT1a	MeBr	48 g/m^3	12-16.9	2 hrs	MPI	Three pulp temperatures to be used to obtain cold spot then continuous monitoring of that pulp. Fan circulation minimum 20 mins at the start.
				40 g/m^3	17+			
Fresh Fruit and Vegetables	Snails (Mollusca), excluding specified species (Giant African Snail, *Cernuella virgata & Cochicella acuta)*	FVT3	MeBr	48 g/m^3	12 +	24 hrs	MPI	Fan circulation minimum 20 mins at start of fumigation See **Note 17** below.

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
	Giant African Snail, *Cernuella virgata* & *Cochicella acuta*	The high dosages of MeBr (VCE2) which would be required are likely to be phytotoxic to plants and produce, and not acceptable for human consumption. This means that this treatment is not suitable treatment for fresh fruit and vegetables.						
Fresh Fruit and Vegetables	Bacteria/ Fungi/ Virus	**Hold consignment!** Contact the MPI Plant Imports team						
	Fruit flies & *Drosophila suzukii*	**Hold consignment!** Following identification, use ONZPR (Official New Zealand Pest Register) and follow instructions.						
Fruit Fly Host Material (i.e., all fruits and vegetables that are hosts to fruit flies)	Arthropods (including Insecta but excluding fruit flies) & Devitalisation .	FVT4	Freezing		-18 or less	7 days	FAO 50	A fully calibrated and reliable thermograph recording may be required for the 7-day exposure period. Freezing must not be used for treating any fruit or vegetable host material that is infested with or suspected of being infested with any fruit fly species, or with *Drosophila suzukii,* material must be destroyed as per FVT12.
Non-Fruit Fly Host Material (i.e., all fruits and vegetables not attacked by fruit flies)	Arthropods (Arthropoda, including Insecta) & Devitalisation	FVT5	Freezing		-10 or less	7 days	FAO 50	A fully calibrated and reliable thermograph recording may be required for the 7-day exposure period.
Pineapples	Insects	FVT1						Importer's choice
		FVT6						
Bananas	Surface insects (does not treat wood pests)	FVT6	HCN	3 g/m^3 (2620ppm)	13.5 +	2 hrs See **Note 18** below.	BNZ/ Pharmo-chem Co.	Fan circulation (1m/sec minimum) throughout treatment, plastic carton liners perforated or removed, inner carton/ box temperature to be used and 50% load factor.
Root crops associated with the soil e.g., ginger,	Surface pests (insects and slugs)	FVT1						Use when only surface pests (insects and slugs) are detected.

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
garlic, taro, yam, cassava, etc.	Nematodes and worms	FVT9	MeBr **or**	48 g/m^3	10-15	4 hrs	USDA T101-Z-1	Pulp temperature to be used. Fan circulation minimum 20 mins at start of fumigation. This treatment will also be effective on surface pests (insects and slugs)
				48 g/m^3	16-20	3.5 hrs		
				48 g/m^3	21-26	3 hrs		
				40 g/m^3	27-31	3 hrs		
				32 g/m^3	32 +	3 hrs		
			Hot air **or**					Rates are being investigated
			Hot water					Rates are being investigated
Root crops associated with the soil e.g., ginger, garlic, taro, yam, cassava, etc.	Weed seeds	FVT10	Reconditioning to remove weed seeds. Verification by inspector supervision or by MPI inspection of a new random sample. Where reconditioning is removal of contamination site (e.g., cutting tops off pineapples) verification is by visual MPI check					
	Soil	FVT11	Either washing or scraping or brushing then re-inspection					
Truffles (Tuber spp.)	Insects	NST11						
Fresh Fruit and Vegetables for destruction								
Fresh Fruit and Vegetables for destruction	Disease: Fungi, Virus, Bacteria	FPT3a						
	Fruit fly host material with fruit flies & *Drosophila suzukii*	FVT12 then FPT3a	MeBr fumigation of the consignment at 144 g/m^3 at 21°C for a minimum of 2 hours. **Then FPT3a but excludes disposal through a quarantine waste system.**					This MeBr rate (FVT12) makes food unsuitable for human consumption.
	Fruit fly host material	FPT3b	For the management of fruit fly host material (fruit and vegetables) seized at international airports and mail centres. These items must be bagged and placed in an MPI Quarantine Waste Bin (FPT3b) if the number and volume of items are suitable to safely fit inside, then following disposal via steam-sterilisation is appropriate".					
	Split fruit	FPT3a						

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
Note 15: Some treatments for fresh fruit and vegetables are contaminant or commodity specific e.g., HCN for bananas. If a specific treatment is not identified for a commodity, then use the generic treatments identified. **Note 16**: It is not acceptable to use chemical dips for commodity items used for human consumption (e.g., fruit, vegetables, stored products etc.). **Note 17**: This MeBr treatment for snails on fresh fruit and vegetables may be permitted only if a full re-inspection is conducted after the MeBr fumigation is completed and all the gas fully discharged. If live snails are found during the re-inspection, the whole consignment must be held and MPI notified immediately. **Note 18**: If discoids are used rather than bottled hydrogen cyanide (HCN) gas, **add 30 mins** to the exposure times mentioned above to allow sufficient time for HCN gas to form. Commodity must be dry as any moisture will absorb HCN and fumigation enclosure must have painted surfaces.								

1.11 Seeds

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Interception treatments for Seeds for Sowing									
Seeds for Sowing See **Note 19**	Insects (*Insecta*) except Trogoderma spp. (see below), and Pea weevil (*Pisum* (peas) see SST16)	SST1	MeBr **or**	Vac: 91 KPa	40 g/m^3	20	3 hrs	FAO 79	Fan circulation minimum 20 mins at start of fumigation. See **Note 22** for ants.
			MeBr **or**		16 g/m^3	20 +	24 hrs	FAO 79	
					24 g/m^3	10-19			
			Phosphine **or**		2 g/m^3	10 -15	7 days	FAO 54	One day can be subtracted if bottled or generated phosphine is used.
						16 - 20	6 days		
						21 - 25	5 days		
						26 + (max 35)	4 days		
			Freezing			-18	7 days	CTO	Up to and including maximum 20 kg. Excludes Pisum, Note: Freezing at owner's risk for seed viability

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
	Trogoderma spp.	SPT3	MeBr	Use rates as prescribed for Trogoderma spp. found in Stored Products. Potential for reduction in germination.					Fan circulation minimum 20 mins at start of fumigation
	Mites (Arachnida)	SST2	MeBr	SST1 then hold securely and re-fumigate after 12-14 days.				MPI	This treatment will affect viability.
	Seed and soil as contaminants	Dressing out or sorting or reconditioning of seeds is a viable "treatment" option in some instances. The method here involves manual or mechanical removal of all biosecurity risk contaminants for destruction by an approved method. Reconditioning must be done under supervision by an Inspector. The reconditioned seed consignment must be re-inspected by an Inspector to ensure freedom from contaminants prior to final release.							
	Bacteria/Fungi/ Virus	Hold consignment. Send for ID at an MPI-approved facility. Following identification, Inspector to use the ONZPR database and follow instructions.							

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage (in g a.i./kg of seed) unless specified otherwise	Source	Comments
Treatment requirements for seed imported under part 2 of the IHS 155.02.05: Seeds for Sowing Importers must supply the product label(s) for each of the chemicals used to treat seeds when the dosage requirement is to use the maximum label rate or when they choose to apply the equivalent measure (see note 32). If available, the export application rate must be used.						
Abies	Fungi	SST13	Captan **or**	2	MPI IHS 155.02.05	
			Thiram			
Acer	Fungi	SST13				
Agropyron/ Agrostis	Fungi	SST7	Carboxin **and** Thiram **or**	0.8 and 1.0	MPI IHS 155.02.05	
			Carboxin **and** Captan **or**	0.8 and 0.7		
			Imazalil **and** Triadimenol **or**	0.08 and 0.22		
			Imazalil **and** Flutriafol	0.08 and 0.08		
Avena	Fungi	SST10	Carboxin **and** Thiram **or**	0.8 and 0.8		

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage (in g a.i./kg of seed) unless specified otherwise	Source	Comments
			Carboxin **and** Imazalil* **or**	0.8 and 0.05	MPI IHS 155.02.05	*Not an option for *Avena* and *Triticum*
			Flutriafol **and** Imazalil **or**	0.05 and 0.05		
			Triadimenol **and** Fuberidazole **or**	0.375 and 0.15		
			Triadimenol **and** Imazalil **and** Fuberidazole **or**	0.23, 0.075, and 0.15		
			Tebuconazole **and** Imazalil	0.025 and 0.05		
Camissonia	Fungi	SST13				
Coffea	Fungi	SST13				
Camellia sinensis	Fungi	SST13				
Cannabis sativa	Bacteria and Fungi	SST14 **or/and*** SST7	Hot water	50°C for 30 mins or at 60°C for 10 mins.	MPI IHS 155.02.05	*depends on IHS option chosen. Hot water treatment currently not available in NZ
Carpinus	Fungi	SST13				
Carya	Insects	SST15	**Treatment** / **Pressure** / **Dosage** / **Temp. °C** / **Time**		MPI IHS 155.02.05	
			MeBr / ATM / 32 g/m^3 / 15-21 / 12 hrs			
			MeBr / ATM / 16 g/m^3 / 21+ / 12 hrs			
			MeBr / 91 kPa / 48 g/m^3 / 15-21 / 1.5 hrs			
			MeBr / 91 kPa / 48 g/m^3 / 21+ / 1 hr			
	Fungi	SST13				
Carthamus tinctorius	Fungi	SST17	Iprodione	2.5	MPI IHS 155.02.05	
Coriandrum	Fungi	SST4	Benomyl, **or**	2.5		

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage (in g a.i./kg of seed) unless specified otherwise	Source	Comments
			Carbendazim, **or**	2.5	MPI IHS155.02.05	See **Note 32** for equivalent importation requirements, **supply label if using equivalence**. * Metalaxyl-M = Mefenoxam. Mefenoxam is a synonym for Metalaxyl-M
			Thiophanate methyl **or**	2.5		
			Fludioxonil **and** Metalaxyl **or** Metalaxyl-M*	0.05 and 0.7		
Cuminum	Fungi	SST17				
Echinochloa	Fungi	SST7				
Fagus	Fungi	SST13				
Glycine	Fungi	SST5	Captan **and** Metalaxyl **or** Metalaxyl-M* **or**	0.7 and 0.7	MPI IHS 155.02.05	See **Note 32** for equivalent importation requirements, **supply label if using equivalence**. * Metalaxyl-M = Mefenoxam. Mefenoxam is a synonym for Metalaxyl-M
			Metalaxyl **or** Metalaxyl-M **and** Thiram	0.7 and 1.0		
Helianthus	Fungi	SST19	Fludioxonil **and** Metalaxyl **or** Metalaxyl-M* **or**	0.05 and 0.7	MPI IHS 155.02.05	See **Note 32** for equivalent importation requirements, **supply label if using equivalence**. * Metalaxyl-M = Mefenoxam. Mefenoxam is a synonym for Metalaxyl-M
			Cymoxanil and Fludioxonil and Metalaxyl or Metalaxyl-M*	0.2. and 0.1 and 0.35		
		SST5				
Hordeum	Fungi	SST10				
		SST20	Difenoconazole **and** Fludioxonil **and** Tebuconazole **or**	Maximum label rate	CTO Decision	**Supply label** * Metalaxyl-M = Mefenoxam. Mefenoxam is a synonym for Metalaxyl-M
			Fludioxonil **and** Tebuconazole **or**			
			Prochloraz **and** Triticonazole **or**			

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage (in g a.i./kg of seed) unless specified otherwise	Source	Comments
			Fludioxonil **and** Fluxapyroxad **and** Triticonazole **or**			
			Ipconazole **or**			
			Ipconazole **and** Metalaxyl or Metalaxyl-M* **or**			
			Fluopyram **and** Prothioconazole **and** Tebuconazole **or**			
			Prothioconazole **and** Tebuconazole			
			Fludioxonil **and** Sedaxane			
Lithocarpus densiflorus	Fungi	SST13				
Lavandula	Fungi	SST4				See **Note 32** for equivalent importation requirements, **supply label if using equivalence**.
Juglans	Insects	SST15				
Macadamia	Insects	SST15				
Myrtaceae	Fungi	SST18	Azoxystrobin, **or**	0.22	MPI IHS 155.02.05	See **Note 32** for equivalent importation requirements, **supply label if using equivalence**.
			Triadimenol, **or**	0.225		
			Mancozeb, **or**	4		
			Tebuconazole	2.5		
Nicotiana tabacum	Fungi	SST5				See **Note 32** for equivalent importation requirements, **supply label if using equivalence**.
Oxyria	Fungi	SST7				

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage (in g a.i./kg of seed) unless specified otherwise	Source	Comments
Panicum	Fungi	SST7				
Phaseolus	Fungi	SST12	Cymoxanil **and** Fludioxonil **and** Metalaxyl or Metalaxyl-M*, **or**	0.2 and 0.1 and 0.35	MPI IHS 155.02.05	See **Note 32** for equivalent importation requirements, **supply label if using equivalence**. * Metalaxyl-M = Mefenoxam. Mefenoxam is a synonym for Metalaxyl-M
			Fosetyl aluminium **and** Thiabendazole **and** Thiram, **or**	1.53, 0.3 and 0.5		
			Captan **and** Metalaxyl or Metalaxyl-M* **or**	1.6 and 0.7		
			Captan **and** Metalaxyl or Metalaxyl-M **and** Thiram **or**	1.6 and 0.7 and 40		
			Captan **and** Fludioxonil **and** Metalaxyl or Metalaxyl-M	1.6 and 0.05 and 0.7		
Pinus	Fungi	SST13				
Pisum	Insects	SST16	**Treatment** / **Dosage** / **Temp. °C** / **Time**			
			MeBr, **or**	16 g/m^3	20+	24 hrs	FAO 79	
				24 g/m^3	10-19	24 hrs		
			Phosphine	2 g/m^3	10 - 15	14 days	MPI 2016	One day can be subtracted if bottled or generated phosphine gas is used. See **Note 19** below.
					16 - 20	13 days		
					21 - 25	12 days		
					26 - 35	11 days		
Pisum	Fungi	SST12				See **Note 32** for equivalent importation requirements, **supply label if using equivalence**.
Pseudotsuga menziesii	Fungi	SST13				
Quercus	Insects	SST15				

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage (in g a.i./kg of seed) unless specified otherwise	Source	Comments
Sorghum	Fungi	SST7				
Sesamum	Fungi	SST17				
Trigonella foenum-graecum	Fungi	SST4				See **Note 32** for equivalent importation requirements, **supply label if using equivalence**.
Triticum	Fungi	SST10				Carboxin and Imazalil not an option
		SST20				
		SST21	Difenoconazole **and** Fludioxonil	Maximum label rate	CTO Decision	**Supply label**
Vicia	Fungi	SST11	Cymoxanil **and** Fludioxonil **and** Metalaxyl or Metalaxyl-M*, **or**	0.2 and 0.1 and 0.35	MPI IHS 155.02.05	* Metalaxyl-M = Mefenoxam. Mefenoxam is a synonym for Metalaxyl-M
			Fosetyl aluminium **and** Thiabendazole **and** Thiram, **or**	1.53, 0.3 and 0.5		
Zea mays	Fungi	SST8	Carboxin **and** Thiram **or**	0.8 and 0.8	MPI IHS 155.02.05	See **Note 32** for equivalent importation requirements, **supply label if using equivalence**. * Metalaxyl-M = Mefenoxam. Mefenoxam is a synonym for Metalaxyl-M
			Carboxin **and** Captan **or**	0.8 and 0.7		
			Fludioxonil **and** Metalaxyl or Metalaxyl-M* **or**	0.025 and 0.02		
			Imazalil **and** Triadimenol **or**	0.08 and 0.22		
			Imazalil **and** Flutriafol **or**	0.08 and 0.08		
			Difenoconazole **and** Metalaxyl or Metalaxyl-M **or**	0.12 and 0.01		
			Metalaxyl* or Metalaxyl-M and Prothioconazole **or**	0.01 and 0.05		
			Ipconazole **and** Metalaxyl or Metalaxyl-M*	0.08 and 0.064		

Commodity/ Product	Reason for Treatment	Short code	Treatment	Humidity	Temp °C	Time	Source	Comments
Seeds for destruction								
Devitalisation of seeds (including contaminant seeds) and Fungi		SST6	Heat		121	15 mins	MPI TFGen	To destroy viability and kill fungi. **Note** that without suitable moisture the seeds are likely to be incinerated.
					100	30 mins		
				40 % RH (min)	85	15 hrs	FAO 50	
Devitalisation of seeds		SPT10	Grinding or milling					No whole seeds remaining

Note 19: When fumigating seeds packed in airtight bags, the bags need to be perforated or opened to allow for gas distribution.
Note 32: Under equivalence, *Coriandrum, Glycine, Helianthus, Lavandula, Myrtaceae family, Nicotiana tabacum, Phaseolus, Pisum, Trigonella foenum-graecum*, and *Zea mays* are able to be treated before arrival in New Zealand with the fungicides specified as above in this section and applied at the maximum label rate legally allowed for treating these Genera/species of seeds in the country of export. Exporters must include the corresponding chemical label(s) with phytosanitary documentation to confirm that the maximum label rate of the exporting country has been applied before export to New Zealand. If available, the export application rate must be used.

1.12 Vehicles, Machinery, Containers, Parts, Equipment[2] (not used with animals), Tyres, etc.

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
Any commodity/product	Snails (not Giant African or Mediterranean snails)	VCE1	HT **or**		60	10 mins	MPI	Only use on heat tolerant commodities.
			MeBr	48 g/m^3	10-15	24 hrs	MPI	
				40 g/m^3	16-21+			
Any commodity/product	Snails: Giant African (*Achatina fulica*) or Mediterranean snails *(Cernuella virgata & Cochicella acuta)*	VCE2	HT **or**		65	10 mins	Brown/MPI unpublished	Only use on tolerant commodities.
			MeBr **or**	118 g/m^3	10-15	24 hrs	Cassell's et al 1994	Only use on tolerant commodities.
				105 g/m^3	16-20			
				86 g/m^3	21-25			
			HCN	48 g/m^3	10 +	24 hrs	FAO 50	
Asbestos (Used)	Hitchhikers	VCE2						To be covered
Batteries (used)	Hitchhikers including reptiles	VCE8	MeBr **or**	80 g/m^3	10-16	4 hrs	MPI	An approved knockdown insecticide must be applied on detection of insects. Fan 20 mins at start of fumigation. **Note:** This fumigation rate does not treat associated wood packaging, use ISPM 15.
				40 g/m^3	16+			
			Phosphine **or**	3 g/m^3	10-30	48 hrs		
			HT		56	30 mins		
Cullet (broken or whole glass for recycling) non-GAS countries	Hitchhikers	VCE1					MPI	

[2] Refer to 1.4 for Equipment used with animals

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
Material permitted to enter NZ for destruction or disposal (Asbestos)	Insects & Hitchhikers	VCE2					MPI	
Paper for recycling	Insects & Hitchhikers	VCE1a						Heat option not available for this commodity.
Scrap metal non-GAS countries	Insects & Hitchhikers	VCE1a					MPI	
Scrap metal GAS countries	Snails - Giant African or Mediterranean	VCE2					MPI	
Shipping & Air containers	Insects, Spiders incl. *Latrodectus spp.* (also see VCE1b & c & d)	VCE1	HT **or**		56	30 mins	MPI	For containerised goods, an approved knockdown insecticide must be applied by the fumigator as soon as the container door is open. 20 mins fan circulation. See **Notes 20, 21, 22, 23, 24, 26** below.
					60	10 mins		
			MeBr	40 g/m^3	16 – 21 +	24 hrs	CFIA	
				48 g/m^3	10 - 15			
	Dermestid and *Trogoderma* spp.	VCE1a	HT **or**		65	10 mins	MPI Vehicle Risk Analysis.	
			MeBr	56 g/m^3	21 +	24 hrs		
				64 g/m^3	16 - 20			
				72 g/m^3	10 - 15			
	Spiders (non-Latrodectus spp.)	VCE1b	Synthetic pyrethroid (e.g., Pyrethroid, Permethrin **or** Cypermethrin)	As per maximum label rate e.g., Pestigas 50 g/100m^3	10 +	6 hrs	DAWR *Arhopalus sp*. rate	Only use spray option where sufficient air space for spray distribution to the pest other wise use VCE1
Shipping & Air containers	Ants, stink bugs and BMSB	VCE1d						

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage			Temp. °C	Time	Source	Comments
	Spiders (including Latrodectus spp.) and ants	VCE1c	Ethyl Formate (EF) + CO_2	**CT EF**	**Initial dose**	**Minimum endpoint**			MPI Technical Advice 2014	The treatment must achieve the CT product, minimum concentrations, temperature, and time listed. Gas input temperature >60°C. Minimum initial CO_2 concentration 4%, minimum end reading 3%. See **Notes 26 and 33**.
				142	65 g/m^3	19.5 g/m^3	21 +	4 hrs		
				165	75.2 g/m^3	22.6 g/m^3	16 - 20			
				186	85.2 g/m^3	25.6 g/m^3	10 - 15			
	Snails	VCE1a								
	Snails - Giant African or Mediterranean	VCE2								
Tents, footwear, golf bags, misc. equipment, Tapa cloth etc	Insects **except** *Trogoderma* spp.	SPT1								
Used parts including tyres – not on rims	Insects	VCE1							Ritchie 2001	If heat is used monitor water temperature in a tyre
Vehicles, machines, parts, misc. equipment etc.	Insects, Pet hair;	VCE1	HT				56	30 mins		All sizes
							60	10 mins		<3 tonne
							60	20 mins		>3 tonne
			MeBr	32 g/m^3			21 +	24 hrs		30% end point MB g/m^3
				40 g/m^3			16 - 21			
				48 g/m^3			10 - 15			
	Dermestidae, Trogoderma spp. & snails	VCE1a								

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
Vehicles, machines, parts, misc. equipment etc.	Snails - Giant African or Mediterranean	VCE2						
	Spiders	VCE1b						
		VCE1c						
		VCE1						
	Ants, stink bugs and BMSB	VCE1d						
Containers, vehicles, machinery, new parts, misc., equipment etc. Used parts require VCE1	Stink bugs e.g., Brown Marmorated Stink Bug (*Halyomorpha halys)*, Yellow Spotted Stink Bug (*Erthesina fullo*), and ants	VCE1d	HT **or**	All sizes	56	30 mins	ISPM 15	The coldest surface of the goods temperature in the hardest to heat area. See **Note 22** for ants.
				<3 tonnes only	60	10 mins		
			MeBr **or**	Achieve a CT of 200 g.h/m^3 or more with a dose of 24 g/m^3 at 10°C and above for 12 hours (but less than 24 hours) with a minimum final reading of at least 12 g/m^3 (50%) **or**;			MPI 2018 Technical review for BMSB Treatments and Joint Australia and NZ BMSB Scheme CTO20180017	**Link to** Consignment preparation See **Note 22** for ants. See **Note 26** below**.** Link to 33% Retention table
				Achieve a CT of 200 g.h/m^3 or more with a dose of 24 g/m^3 at 10°C and above for 24 hours or longer with a minimum end point reading of 8 g/m^3 (33% of 24 g/m^3).				
			Sulfuryl fluoride	A dose of 24 g/m^3 or above, at 10°C or above, for 12 hours (but less than 24 hours), with a minimum end point concentration of 12 g/m^3 (50%) **or**;				***Fumiguide or Fumicalc method** **Note**: Under the BMSB Programme Offshore Treatment certificates must
				A dose of 24 g/m^3 or above, at 10°C or above, for 24 hours or longer, with a minimum end point concentration of 8 g/m^3 (33% of 24 g/m^3) **or**;				

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
				Achieve a CT* of 200 g.h/m^3 at 10°C or above, for 12 hours (but less than 24 hours), with a minimum end point concentration of 12 g/m^3 (50%) **or**; Achieve a CT* of 200 g.h/m^3 or more at 10°C or above, for 24 hours or longer, with a minimum end point concentration of 8 g/m^3 (33% of 24 g/m^3).				record the endpoint reached. Onshore treatment certificates do not require the end point to be recorded (under MPI Treatment Programme requirements) See **Note 22** for ants. See **Note 25 and 26** below.
Containers, vehicles, machinery, new parts, misc., equipment etc. Used parts require VCE1	Stink bugs e.g., Brown Marmorated Stink Bug (*Halyomorpha halys)*, Yellow Spotted Stink Bug (*Erthesina fullo*), and ants	VCE1d	$EF + CO_2$	**CT EF**: 65 **Initial dose**: 20 g/m^3 **Minimum endpoint**: 15 g/m^3	10°C	4 hrs	MPI 2021	The treatment must achieve the CT product, minimum concentrations, temperature, and time listed. Gas input temperature >60°C. Minimum initial CO_2 concentration 4%, minimum end reading 3%. See **Notes 22** for ants and **Notes 26 and 33**.
Aircraft and watercraft	Stink bugs e.g., Brown Marmorated (*Halyomorpha halys),* Yellow Spotted Stink Bug (*Erthesina fullo*)	VCE1e	Insecticide	Bifenthrin, Cyphenothrin, Esfenvalerate, Permethrin **or** Silafluofen (residual insecticides) as per Maximum label rate. Note: Guidance and Certificate example can be found at Find treatment options and providers.			MPI 2018	All compartments where stink bugs may hide must be opened before fogging or spraying.
		VCE1d						VCE1d used at owners' risk
Vehicles, machines, parts, tyres, containers, tents, footwear, golf bags, misc. equipment etc.	Soil, leaves, needles, seeds etc.	VCE9		Decontaminate by sweeping or vacuuming and/or washing off. For soil contamination, wash off and disinfect only with disinfectant when animal residue is detected. All contaminants removed must be collected and destroyed through an MPI approved facility and process.				Shoes, boots, sports footwear, and equipment with soil do not normally need disinfecting unless animal residue detected.
Vehicles, machines, parts, tyres,	Contaminated with animal, products	EAP5						Contaminants to be removed prior to

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
containers, footwear, misc. equipment etc.	such as blood or faeces (except equine animals)							disinfecting. Contaminants to be destroyed in an approved manner
	Contaminated with equine animal products such as blood or faeces	EAP5a						Contaminants must be removed prior to disinfecting. Contaminants must be destroyed in an approved manner
Used vehicles, machinery, parts, tyres that would normally come into contact with animals (transport of or farming of or processing of, hunting of or pet keeping of etc.)	Contamination with soil or vegetation (that could include animal products such as blood or faeces)	EAP5f	Originating from countries with African Swine Fever Virus (ASFV)* the decontamination process is as follows: Sweep and/or wash away contaminants (**all** soil, animal residue, grass etc.), **and** Disinfect using one of the attached list of disinfectants at the dilution rate and duration specified and applied as per the manufacturers recommendations, **or** Contaminants to be collected and destroyed in an approved manner.				MPI Risk and Science	ASFV is known to survive in soil less than 20grams in weight (normal contaminant threshold) for 3-4 days. Extra precautions are required to remove all contaminants, especially soil and animal residue, before disinfection is applied. *Within the OIE link to countries with ASFV select 'Analytics' then 'Disease Situation'. Under 'Disease Situation', select the following filters: • Disease – African swine fever • Disease status – **present** and **suspected**
			Sweep and/or wash away contaminants (**all** soil, animal residue, grass etc.), **and** Store the vehicle in a dry secure storage area for 7 days or more. Contaminants to be collected and destroyed in an approved manner.					
Vehicles, Trucks, Utilities and	Fungi in wooden decking	VCE5	Sodium hypochlorite solution (NaOCl)	200 mL of 31.5 g/L a.i. NaOCl in 1 litre water		20 mins	MPI	Steam clean decking first if dirty, then liberally apply treatment.

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Temp. °C	Time	Source	Comments
Containers with wooden decking	(Refer to **Note 27** for wood/ fungal rots)		Didecyl dimethyl ammonium chloride (e.g., Wet & Forget)	200 mL of 99 g/L DDACl in 1 L water		20 mins		
Vehicles, Trucks, Utilities and Containers with wooden decking	Fungi in wooden decking (Refer to **Note 27** for wood/ fungal rots)	FPT4	HT					See page 15 and **Note 3**.
Watercraft (yacht, small boat etc.)	Termites	VCE10	HT	Thickest wood core temperature to be data logged in 3 locations, including one known termite site.	48	1 hour	MPI technical advice	To achieve this target the internal cabin temperature needs to be brought up to 55°C and held for at least 5 hours.
					50	30 mins		
Winches, wire or fibre ropes or cables for agricultural and forestry machinery	Soil, fungal spores, insects, seeds, etc.	VCE7	HT		70	4 hrs	MPI	
					121	15 mins		

Note 20: Warning: It is advisable to use heat or sulfuryl fluoride treatment option instead of MeBr when treating vehicles with rubber, leather seats and other sulphur containing components, due to a possibility of tainting post fumigation. Methyl bromide information sheet

Note 21: Motor homes & caravans if fumigated must use the lowest rate at 16-21°C and vented with fans for minimum 2 hrs with all cupboards open. Some materials can be affected by Methyl bromide, check: Methyl bromide information sheet

Note 22: Where containers are being treated for ants then the container must be covered and treated with doors open

Note 23: All plank floored containers must be covered for fumigation.

Note 24: When heat is used all cavities of the vehicle to achieve temperature & continuous fan for duration. At least one sensor must be inserted in the carpet layer if present, for a container it is the door seal and for scrap metal includes the surface temp of the largest accessible piece away from heat input.

Note 25: Sulfuryl fluoride is not registered in NZ, this rate will not kill eggs nor spiders. CT g.h/m^3 is the concentration over time sum.

Note 26: For containerised goods for on arrival treatment, an approved knockdown insecticide must be applied by the fumigator as soon as the container door is open.

Note 27: If decayed portions of decking or cross members are observed, the wood must be heat treated (FPT4) or removed and destroyed by incineration or by another approved method.

Note 33: Treatment follows normal fumigation practices (ICCBA fumigation methodology) as appropriate.

1.13 Soil

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Soil, less than 10kg	Micro-organisms including insects, bacteria, fungi etc.	SOT1	HT **or**	Minimum 40% RH		100	25 mins	MPI.STD. SOWTR	Soil must be moist during HT
						85	15 hrs		
			Irradiation		50 kGy				
Peat	Micro-organisms including insects, bacteria, fungi etc	SOT2	Autoclave **or**	Pres:100 kPa		120	30 mins	MPI.STD. FERTGRO	
			HT			85	15 hrs		
Soil	Contaminant on products or items **not used** for human consumption	SOT3	The soil must be removed for destruction by incineration or any other approved method. The product to be washed and disinfectant only needed when animal residue detected.						Shoes, boots, sports footwear and equipment do not normally need disinfecting unless animal residue detected.

1.14 Vessels or Floating Structures

Commodity/Product	Reason for Treatment	Short code	Treatment	Source	Comments
Marine-going boats or other craft (i.e., Barges, hovercraft, floating drilling rigs etc.)	Biofouling on external hull areas	BIOF1	In-water cleaning by mechanical or manual methods: all visible biofouling is removed from the cleaned area or rendered non-viable (not capable of living and developing to reproductive maturity). All biological material ≤ 12.5 µm particle size must be captured or rendered non-viable. See **Note 28. Or**	MPI 2016, MORRISEY 2015	Note: there are currently no approved providers of these treatments.
			Shrouding (enclosure or encapsulation) of vessel within water barrier material, isolating craft from surrounding environment: All biofouling in the treated area must be rendered non-viable (not capable of living and developing to reproductive maturity). See **Note 29**		
Marine-going boats or other craft (i.e., barges, hovercraft, floating drilling rigs etc.)	Biofouling in internal niche areas (sea chests, pipework, etc.)	BIOF2			
Ballast water sediment	Marine larvae, propagules, cysts, etc.	MAR1	Disposed of to a landfill that has no drainage to the sea directly or indirectly.		
Watercraft (yacht, small boat etc.)	Termites	VCE10			

Note 28: No release to the marine environment unless filtered to ≤ 12.5 µm or treated to render biological material non-viable. No material dislodgement of > 0.5 cm in diameter during system mobilisation, operation or demobilisation (e.g., by divers, hoses or system). Other residues to be buried in a landfill in accordance with regional government requirements.
Note 29: Organisms may be rendered non-viable when body structures are broken, missing or decomposing; feeding/movement cannot be observed, and organisms are unresponsive/no respiration currents can be observed. The efficacy of these shrouding treatments in achieving this must be established prior to treatment use.

1.15 Water

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Type	Dosage	Temp. °C	Time	Source	Comments
Water as contaminant or if imported up to 100L	Micro-organisms including mosquito life stages	WAT1	Boiling			100	1 minute	MPI STD; BMG-STD-SOWTR	See **Note 30** below
			Calcium hypochlorite		20 mg/L		Agitate for 1 minute then let sit for 30 mins		
	Mosquito larvae	WAT2	BTI (*Bacillus thuringiensis israelensis*) larvicide	Liquid concentrate	50/50 with water		24 hrs	Ministry of Health	Spray for complete coverage of the water or receptacle surface. See **Notes 30 and 31** below.
				Briquettes	1 per 12 m^2				
Note 30: Contact MOH when mosquitoes are found and discuss appropriate treatments and rates. Adult mosquitoes may be exterminated by utilising synthetic pyrethroids applied as contact insecticides, aerosols or by thermal fogging. **Note 31**: Chemical toilets in caravans and motor homes do not require treatment.									

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Quantity of formulated product	Active Ingredient	Water Volume	Concentration	Source	Comments
Pooled water on used machinery etc. **Large receptacles**, surface treatment after draining water	Insects including **mosquitoes** completing lifecycle in water, and especially unhatched eggs at or below the waterline	WAT3	Granular pool chlorine (650 g/kg calcium hypochlorite)	1 kg	650 g	65 L	1 %	New Zealand Ministry of Health	Pooled water must be drained treated and the cavity treated with 1% solution of any of the chlorination solutions mentioned. Solution must be sprayed onto surfaces including tide marks to the point of runoff such that the solution stays in place for at least 5 seconds. Where fumigation occurs after draining spraying is not required. See **Notes 30 and 31.**
				154 g	100 g	10 L	1 %		
				77 g	50 g	5 L	1 %		
				15.4 g	10 g	1 L	1 %		
			Granular pool chlorine (700 g/kg calcium hypochlorite)	1 kg	700 g	70 L	1 %		
				143 g	100 g	10 L	1 %		
				71.5 g	50 g	5 L	1 %		
				14.3 g	10 g	1 L	1 %		
			Liquid pool chlorine (150 g/kg benzalkonium chloride)	1 kg ≈ 1 L	150 g	15 L	1 %		
				667 g ≈ 667 mL	100 g	10 L	1 %		
				335 g ≈ 334 mL	50 g	5 L	1 %		
				66.7 g ≈ 66.7 mL	10 g	1 L	1 %		
			Liquid bleach (4 % sodium hypochlorite)	2.5 L	4 %	10 L	1 %		
				1.25 L	4 %	5 L	1 %		
				1 L	4 %	4 L	1 %		
				0.25 L	4 %	1 L	1 %		
Pooled water including tide marks on used machinery etc. **Small receptacles** including those with tide marks, especially with difficult access e.g., semi-sealed drums	Insects including **mosquitoes** completing lifecycle in water	WAT4	Granular pool chlorine (650 g/kg calcium hypochlorite)	500 g	325 g	100 L	0.33 %	New Zealand Ministry of Health& Australian Mosquito Manual 2002	Where draining of pooled water is not readily possible; treatment must be done by filling the receptacle to the point of overflow with chlorination solution of 0.3 to 0.35 % chlorine. The solution must be in place for at least 30 mins and then emptied on the same day after treatment. Generally used for small receptacles up to 200L (volume) and includes those with a “tide mark”.
				100 g	65 g	20 L	0.33 %		
				50 g	32.5 g	10L	0.33 %		
			Granular pool chlorine (700 g/kg calcium hypochlorite)	500 g	350 g	100 L	0.35 %		
				100 g	70 g	20 L	0.35 %		
				50 g	35 g	10 L	0.35 %		
			Liquid pool chlorine (150 g/kg	2 kg ≈ 2 L	300 g	100 L	0.30 %		
				200 g ≈ 200 mL	30 g	10 L	0.30 %		

Commodity/ Product	Reason for Treatment	Short code	Treatment/ Chemical	Quantity of formulated product	Active Ingredient	Water Volume	Concentration	Source	Comments
			benzalkonium chloride)	100 g ≈ 100 mL	15 g	5 L	0.30 %		Warning signs must be placed on the treated receptacles until emptied. See **Notes 30 and 31.**
			Liquid bleach (4 % sodium hypochlorite)	8.33 L	4 %	100 L	0.33 %		
				833 mL	4 %	10 L	0.33 %		
				100 mL	4 %	1.2 L	0.33 %		

Appendix 1: Amendment Record and Implementation Schedule

Amendments prior to 22 March 2023 are found here. For hard copies, please ensure that all amendments are inserted, and obsolete pages removed, or print out an entire new copy.

Date: 27/03/2024	**Amendment No: 23**	
Page/Code	**What has Changed**	**Implementation Date**
5	New section is added to provide advice for users on how to best navigate and find information in the document.	When published
Whole document	Formatting change to display each option in a separate row.	When published
11-12, IAP8 and IAP8a	The source of these treatments is corrected.	When published
19-20, 22	The maximum thickness of various wood items is corrected to 300 mm in the commodity description column to align with the IHS.	When published
20, FPT5	Note 18 corrected to Note 22.	When published
27, NST13	Clarification added: time only applies to dips, not spray	When published
29-30, Note 8	Note 8 is amended to clarify requirements for dipping and spraying.	When published
29-30 and 32-33	The treatments requirements for the packaging accompanying nursery stock are corrected to the adequate insect, nematode or mite dip or fumigation regime.	When published
29-30, NST13	Clarification added:" Time only applies to dip"	When published
34, NST10	The wording of NST10 is re-aligned with the wording in the Nursery stock IHS and each option is presented in a separate row. The source of the treatment is added.	When published
46-50, SST4, SST5, SST8, SST11, SST12, SST19 and SST20	All treatments under these codes now allow to use either metalaxyl or metalaxyl-M.	When published
55, EAP5a	EAP5a is added as an option for Vehicles, machines, parts, tyres, containers, footwear, misc. equipment etc. contaminated with equine products on page 55, and EAP5 is amended to clarify the two options (equine and other animals).	When published
57, VCE10	The duration the wood core temperature must be maintained at 50ºC is increased to 30 minutes.	When published
59-61, Notes 30 and 31	Notes 30 and 31 are moved up and mentioned in the "Comments" column.	When published
Appendix 1	Amendments that are over a year old are now moved to a separate document (link page 57).	When published

Date: 19/10/2023	**Amendment No: 22**	
Page/Code	**What has Changed**	**Implementation Date**

10, EAP1	Changed the autoclave temperature from 118 to 120 °C to align with the other autoclave times and temperatures with the same reference (FAO 50).	When published
14, FPT2	The duration of the autoclave treatment is changed from 10 to 30 minutes to align with the other treatments using this method.	When published
20, SPT4	The note associated with the commodity is rectified from Note 4 to Note 5.	When published
29, NST2 and NST16	The reference number for the Nursery stock IHS was incorrect.	When published
31, FNS6/NST6	The second option (NST6) is displayed in a separate row	When published
36-37, FVT1 and FVT9	The option to use FVT1 is added for root crops when only surface pests are detected, FVT9 can be used when nematodes and worms are present.	When published
38-43, SST4,5,8,12,18, 19, 20,21	Note 32 is amended to specify that application rates for export, if available, must be used if using equivalence rather than the specified application rate. This is also specified on page 38.	When published
45-47, VCE1d	Text about ants, stink bugs and BMSB is moved from the commodity column or reason for treatment column to a row for these specific pests.	When published
49, EAP5f	Rectified the hyperlink to the OIE website.	When published
67, Appendix 2	Changed the name of the approving entity for irradiation.	When published

Date: 09/06/2023	**Amendment No: 21**	
Page/Code	**What has Changed**	**Implementation Date**
24, NST1	Added text to clarify that two insecticides must be mixed, to align with other similar treatments. Amended treatment options (choice of chemicals) and application rates against insects. The comment section is amended to refer to the pesticide label for guidance on use on specific varieties and use on dormant vs non dormant material.	When published
25, NST2	The temperature ranges for the methyl bromide treatment have been amended to be aligned with similar treatments in the ABTRT, ISPM15 and the temperatures specified in the Nursery stock IHS.	When published
24-25, NST6	The comment section is amended to refer to the pesticide label for guidance on use on specific varieties and use on dormant vs non dormant material.	When published
25, NST3	Wording of treatment clarified and aligned with wording in Nursery stock IHS	When published
25, NST6 and 32, FNS7	Dichlorvos is removed as an option in NST6 and FNS7 due to unavailability.	When published

29, NST14 and NST15	NST14 is deleted as it is identical to NST3, NST15 is deleted, as a consequence the "dormant cutting" section is removed but the treatment for "All whole plants and cuttings e.g., cuttings, scions, bud wood, marcots, off-shoots" still provide multiple options for cuttings.	When published
29, NST2	Wording is clarified, NST6 is not an option for *Dracaena*.	When published
32, FNS7	Amended text to align with wording used for other chemical treatments requiring mixtures	When published
37, SST20	The word "or" was removed between the words "Fluxapyroxad" and "Triticonazole" and placed after "Triticonazole"	When published
Multiple pages, SST4,5,8,12,18,19,20,21	"**supply label"** is added to the comments referring to Note 32 or treatments requiring the maximum label rate.	When published

Date: 22/03/2023	**Amendment No: 20**	
Page/Code	**What has Changed**	**Implementation Date**
28-30, NST16	On shore treatment for Dracaena is now added to ABTRT, a similar treatment was previously specified in the Nursery Stock IHS.	When published
45-46, VCE1	Text is amended to clarify that if the insects present are stink bugs or ants, VCE1d can be used instead of VCE1.	When published
38, SST4, SST5, SST8, SST11, SST12, SST18, SST19, SST20, SST21	Text is amended to clarify that importers must supply the labels for each of the chemicals used to treat seeds when the requirement is to use the maximum label rate or when they choose to apply the equivalent measure (note 32).	When published
47-48, VCE1d	Removed "4" after 8 g inserted by error in the sulfuryl fluoride schedule.	When published

Appendix 2: Definitions

a.i. Active ingredient

Atm Under normal atmospheric pressure

BACC Biosecurity Authority Clearance Certificate

Biosecurity contaminant(s):

Any organic material, thing or substance that (by reasons of its nature, origin or other relevant factor) it is reasonable to suspect harbours or contains a regulated pest (or parts thereof) and where such organic material/thing/substance is not intended for biosecurity clearance under the Act.

°C Degrees Celsius. Where temperatures are given, measure actual rates with Swedish rounding, e.g., 12.4°C = 12°C; 12.5°C = 13°C.

CITES Convention on International Trade in Endangered Species of Wild Fauna and Flora. http://www.cites.org/

CO_2 Carbon dioxide

CT Is expressed as g.hr/m^3 or grams x hours per m^3 = the sum of the fumigant concentration readings over time. E.g., 20g/m^3 x 10 hours = 200g.h/m^3
CT can be estimated using the following calculation:

$$CT_{n,n+1} = (T_{n+1} - T_n) \times \sqrt{C_n \times C_{n+1}}$$

Where T_n is the time the first reading was taken, in hours

T_{n+1} is the time the second reading was taken, in hours

C_n is the concentration reading at *T*n, in g/m^3

C_{n+1} is the concentration reading at *T*n+1, in g/m^3

$CT_{n,n+1}$ is the calculated C*T* between *T*n and *T*n+1, in g·h/m^3

e.g., 20g/m^3 @ 0 hour, 14g/m^3 @ 12 hours; 200g.h/m^3 = 14 - 0 x SQR (20x14)

Deep burial Buried under a minimum of two metres compacted fill at an MPI approved site. A CTO direction will be required for deep burial at a non-MPI approved site. A CTO direction for goods under $NZ50,000 is not required on a MPI approved site, as per the standing CTO direction 30A(4) Destruction of non-complying unaccompanied risk goods.

Disinfectant Any of the MPI approved disinfectants; refer - http://www.biosecurity.govt.nz/files/regs/stds/MPI-approved-disinfectants.pdf

DOC Department of Conservation

ECO2FUME Phosphine with carbon dioxide as a carrier gas

EF Ethyl formate

FAO 50 International Plant Quarantine Treatment Manual; FAO Plant Production and Protection Paper 50, Food and Agriculture Organisation of the United Nations, Rome. Editors: J F Karpati, C Y Schotman & K A Zammarano. 1983.

FAO 79 Manual of Fumigation for Insect Control; FAO Agricultural Studies No. 79, Food and Agriculture Organization of the United Nations, Rome 1969. By H A U Monro. 1969. http://www.fao.org/docrep/X5042E/x5042E00.htm#Contents

Formalin Formalin fumigation: (37% formaldehyde solution)

g Grams

g/L	Grams per litre
g/kg	Grams per kilogram
g/m^3	Grams of active ingredient per cubic metre
GAS	giant African snail
h	Time in hours (i.e., CT = 900 g.h./m^3
hr	Hour/Hours
HCN	Hydrogen cyanide fumigation
HT	Heat treatment
IHS	Import Health Standard, Biosecurity Act 1993
Inspector	As per the Biosecurity Act 1993
Irradiation	Any consignments to be irradiated are subject to approval and acceptance by MSD Animal Health Ltd. Items must be packaged so that they fit into a container with the dimensions 384 mm x 600 mm x 276 mm and weigh no more than 8 kg.
ISPM15	International Standards for Phytosanitary Measures, publication No. 15, Guidelines for regulating wood packaging material in international trade: https://www.ippc.int/core-activities/standards-setting/ispms
ISPM 28	Phytosanitary Treatments for Regulated pests: https://www.ippc.int/core-activities/standards-setting/ispms
ISPM 43	Guidelines for the use of fumigation as a phytosanitary measure
kg	Kilogram
kGy	Kilogray, a metric unit for measuring radiation
kPa	Kilopascal, a metric unit for measuring pressure above or below atmospheric; 1 kPA = 0.1450 psi
MPI STD	Ministry for Primary Industries Standard
MeBr	Methyl bromide
Mins	Minutes
MOH	Ministry of Health
OIE	Office International des Epizooties- World Organisation for Animal Health
ONZPR	Official New Zealand Pest Register is a searchable data base of pests regulated in New Zealand. The database replaces the previous Biosecurity Organisms Register for Imported Commodities (BORIC)
Pestigas	Pestigas is synergised pyrethrum with carbon dioxide as a carrier gas.
ppm a.i./m^3	Parts per million active ingredient per cubic metre
ppm	Parts per million
Pres	Under positive pressure
Risk goods	Means any organism, organic material, or other thing, or substance, that (by reason of its nature, origin, or other relevant factors) it is reasonable to suspect constitutes, harbours, or contains an organism that may: a) Cause unwanted harm to natural and physical resources or human health in New Zealand; or b) Interfere with the diagnosis, management, or treatment, in New Zealand, of pests or unwanted organisms.
RH	Relative humidity

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	EAP - Equipment Used with Animals or Water	page 11
	FNS - Flowers and Foliage	page 31
	FPT - Forest Product Treatment	page 14
	FVT - Fruit and Vegetable Treatments	page 34
	IAP - Inedible Animal Products	page 7
	MAR - Vessels and Water craft	page 52
	NST - Nursery Stock Treatment	page 24
	PPT - Plant Products	page 22
	SOL - Soil	page 51
	SPT - Stored Product Treatment	page 19
	SST - Seeds Treatment	page 38
	VCE - Vehicles Containers Equipment	page 44
	WAT - Water	page 53
SO_2	Sulphur dioxide	
TF	Transitional Facility	
Vac	Under partial vacuum	