



Approved Biosecurity Treatments For Risk Goods Directed For Treatment

BNZ-STD-ABTRT

MAF Biosecurity New Zealand



Ministry of Agriculture and Forestry
Te Manatū Ahuwhenua, Ngāherehere

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INTRODUCTION

This schedule specifies options for risk goods requiring treatment prior to obtaining biosecurity clearance. The schedule covers treatments specified in import health standards and treatments used to eradicate pests and diseases intercepted on risk goods. The treatment must be carried out by a treatment supplier approved to the Ministry of Agriculture & Forestry (MAF) Standard - Requirements for the supplier of official treatments. Additionally, the treatment supplier may only apply treatments given in their scope of approval by MAF Biosecurity New Zealand (MAF BNZ).

The schedule is separated for convenience into commodity groups commonly imported into New Zealand and lists the approved treatment options. The rates or dosages to be used, the temperature ranges to be used at, the exposure times needed to attain pest-kill and the source from which the treatment is obtained are specified 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 dosage specified to ensure the success of the selected treatment.

The treatment options specified in this schedule are written in good faith according to published documentation or as recommended by manufacturers. MAF takes no responsibility for any incorrect treatment application, nor any damage caused to commodities following the application of a quarantine treatment mentioned in this standard. It is the importer's choice after considering the treatment options, receiving advice from the treatment supplier and considering whether to reship or destroy, to then treat the goods. Any item awaiting treatment must be held securely and 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.

An importer may propose an alternative treatment for approval by MAF BNZ. Full details that prove equivalence of efficacy are to be provided to MAF BNZ. 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.

Treatment Suppliers must ensure that the latest version of this schedule is being used at all times (date at the bottom of the page). It is the treatment suppliers responsibility to ensure the goods are safe to access or handle after treatment. Treatment certificates will be verified by MAF BNZ before the goods treated will be given clearance.

This schedule may be reviewed and amended at any time at the discretion of the Chief Technical Officer (CTO).

ENDORSEMENT

Pursuant to my duties as a Deputy Chief Technical Officer under the Biosecurity Act 1993 I hereby issue this technical standard.



Clive Gower-Collins
Deputy Chief Technical Officer
Team Manager Biosecurity Operational Standards
Pre Clearance
Biosecurity New Zealand

Date: 5 December 2007

KEY TO ABBREVIATIONS AND NOTES OR MEANINGS TO WORDS/ TERMINOLOGY

a.i.	Active ingredient
Atm	Under normal atmospheric pressure
BACC	Biosecurity Authority Clearance Certificate
BNZ	Biosecurity New Zealand
BORIC	Biosecurity Organisms Register for Imported Commodities
°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
Disinfectant	Any of the MAF approved disinfectants; refer - http://www.maf.govt.nz/biosecurity/border/transitional-facility/disinfectants.pdf
DOC	Department of Conservation
ECO2 Fume	Phosphine with carbon dioxide as a carrier gas
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.
Formalin	Formalin fumigation: (37% formaldehyde)
g	Grams
g/L	Grams per litre
g/kg	Grams per kilogram
g/m ³	Grams per cubic metre
hr	Hour/Hours
HCN	Hydrogen cyanide fumigation (trade name Cyanosil)
HT	Heat treatment
IHS	Import Health Standard, Biosecurity Act 1993
Inspector	As per the Biosecurity Act 1993
ISPM15	International Standards for Phytosanitary Measures, publication No. 15, Guidelines for regulating wood packaging material in international trade
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
MAF STD	Ministry of Agriculture and Forestry Standard
MBr	Methyl bromide

min	Minutes
MOH	Ministry of Health
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
SO ₂	Sulphur dioxide
TF	Transitional Facility
Vac	Under partial vacuum

LIVE ANIMALS AS HITCHHIKERS AND ILLEGAL IMPORTS

Commodity/Product	Requirements to be met	Treatment Procedure to follow
<p>Small Animals; includes Fish, Amphibians, Reptiles and small Mammals</p> <p>See Note 1 below re CITES</p>	<p>Euthanasia as directed.</p> <p>Also refer below for treatment with carbon monoxide.</p> <p>[Unless stated otherwise, the processes here are to be undertaken or supervised by an Inspector.]</p>	<p>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 dangerous since they may be wild, 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. A number of 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:</p> <ol style="list-style-type: none"> 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 a MAF veterinarian to carry out the euthanasia process. A MAF veterinarian may choose other acceptable euthanasia options to those mentioned here, for example injection with suitable barbiturates. 3. In the absence of a MAF veterinarian, any other registered MAF-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.

Commodity/Product	Requirement	Short Code	Treatment Procedure to follow	Comments
Amphibians (e.g. frogs), Reptiles (e.g. lizards) and Fish See Note 1 below re CITES	Euthanasia or LAT3 or LAT4	LAT1	Place in a refrigerator for a period of 5 hr to induce torpor then in a freezer for 24 hr.	As hitchhiker or illegal imports but check with DOC for endangered species first
Small Mammals (e.g. rodents) and Birds. See Note 1 below re CITES	Euthanasia by concussion or LAT3 or LAT4.	LAT2	Refer to an approved veterinarian or consult MAF BNZ. If an approved veterinarian is not available or obtaining rapid MAF BNZ 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.	As hitchhiker, but check with DOC for endangered species Source FAO 79
	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. It should also be noted that some amphibians and reptiles are capable of holding their breath for long periods, and therefore to ensure death has occurred, contain the animal for 24 hr.	
	Euthanasia by methyl bromide 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. Fumigate with methyl bromide at the appropriate rate, taking into consideration the commodity involved (refer elsewhere in this schedule for most appropriate rates and exposure times).	
Note 1: The Trade in Endangered Species Act 1989 requires that the Department of Conservation (DOC) is notified before the fate of a CITES organism is decided. DOC may decide to reshipe a live CITES hitchhiker rather than opt for euthanasia. Ensure that DOC is satisfied before action is taken to destroy the animal.				

INEDIBLE ANIMAL PRODUCTS

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Animal Products and	Insects (Insecta) and ticks – not including Dermestidae	IAP1	Fumigate with one of the following options: - MBr at 48g/m ³ for 3 hrs at Vac: 91 kPa if at 21-26°C; OR - MBr at 56g/m ³ for 3 hrs at Vac: 91 kPa if at 16-20°C; OR - MBr at 64g/m ³ for 3 hrs at Vac: 91 kPa if at 10-15°C OR EAP 1	MAF STD; ANIEQPIC. ALL	Fan circulation minimum 20 minutes at start of fumigation
Non-Viable Dried Invertebrate Specimens (e.g. dead insect collections)	Mites (Arachnida)	IAP2	Fumigate twice with MBr using one of the following options: - MBr at 48g/m ³ for 3 hrs at Vac: 91 kPa if at 21-26°C; OR - MBr at 56g/m ³ for 3 hrs at Vac: 91 kPa if at 16-20°C; OR - MBr at 64g/m ³ for 3 hrs at Vac: 91 kPa if at 10-15°C OR EAP 1 The second fumigation must be 12-14 days after the first.	MAF BNZ	After the first fumigation, hold securely in plastic bags and re-fumigate after 12-14 days, or if mite is non- regulated release.
	Dermestidae including <i>Trogoderma spp.</i>	SPT3	Refer to Trogoderma rates in Stored Products Schedule		
Animal fibre (from sheep, goat or camelids) - Unprocessed for private/test consignment refer Page 10	Mandatory	IAP 3	Treatment as per Section 9 of FIBUNPIC.ALL http://www.maf.govt.nz/biosecurity/imports/animals/standards/fibunpic.all.htm	MAF STD; FIBUNPIC. ALL	Follow IHS and/or Permit

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Animal fibres - other			Refer to the animal and animal products IHS search engine using the reference “fibre”: http://www.maf.govt.nz/biosecurity/imports/animals/standards/index.htm		Follow IHS and/or Permit
Fibre - Scoured		IAP 4	Treatment as per Section 9 of FIBSUCIC.ALL http://www.maf.govt.nz/biosecurity/imports/animals/standards/fibsucic.all.htm	MAF STD; FIBSUCIC. ALL	
Fibre (from sheep, goats or camelids) for testing	After testing all fibre must be treated.	IAP5	Irradiate at a minimum dose of 50 kGy (i.e. either one treatment of 50 kGy, or two treatments of 25 kGy); OR Destroy the fibre by incineration OR Remove all seeds and plant material from the fibre AND any one of the following: Dye the fibre; OR Expose to dry heat at 140°C for 3 hours; OR Immerse in water heated and maintain at 95°C for 25 minutes or 100°C for 15 minutes; OR Autoclave at 120°C for 10 minutes; OR Fumigate with 20ml/m ³ formalin for 8 hrs at Atm, 18°C, 80-90% humidity.	MAF STD; FIBTESIC. ALL	Liquid effluent from the treatment must be discharged to sewer; and solid and semi-solid wastes (including all seeds and plant material removed from the fibre) must be collected and disposed of by incineration or deep burial. Items must be unpacked so as to completely expose the goods for formalin treatment.
Wool packs - used	All used wool packs must be heat treated.	IAP6	Washed in hot water at: - 95°C for 25 minutes; OR - 100°C for 15 minutes;	MAF STD; FIBWPKIC .ALL	At the end of processing, the wool packs must be free of visible contamination.

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Fibre (from sheep, goats, camelids) for private use (up to 20kg)	If not certified as gamma irradiated @ 50kGy	IAP7	Remove all visible contamination, then fumigate with 37% formalin at a rate of 20 ml/m ³ for 8 hrs at Atm, 18°C, 80-90% humidity. Incinerate all contaminated material.	MAF STD; FIBFLEIC. ALL	Fibre with correct off-shore certification for gamma irradiation does not need to be treated.
Ornamental animal products containing animal skin, fibre or bone (e.g. skin drums and shields; hunting trophies; pieces of animal skin and hair for fly-tying material.) Mounted fish specimens and ornaments, fish jaws, shells and shell ornaments Blown eggs e.g. souvenirs, curios or ornaments	Where treatment is required as per MAF BNZ Std; INETROIC.AL L	IAP8	EITHER fumigate with: <ul style="list-style-type: none"> - 37% formalin at 20ml/m³ and 16g potassium for 8 hrs at Atm, 18°C, 80-90% humidity; OR - 10% solution of formalin (formaldehyde solution) applied as spray in airtight container at 18°C for 8 hr OR irradiate at 50 kGy Note: if the item is over 32mm then add 1 hour per extra 4mm	MAF STD; INETROIC. ALL	Items must be unpacked so as to completely expose the goods for formalin treatment.
Feathers on handicrafts, artefacts, fly tying etc	Where treatment is required as per FEACFOIC.A LL	IAP9	EITHER fumigate with 37% formalin at 20ml/m ³ and 16g potassium for 8 hrs at Atm, 18°C, 80-90% humidity. OR irradiate at 50 kGy	MAF STD; FEACFOIC .ALL	

EQUIPMENT USED WITH ANIMALS AND ANIMAL PRODUCTS

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
All Animal Equipment	Insects and ticks	EAP1	Use schedule EAP1	MAF BNZ	
	Mites	EAP2	Use schedule EAP2	MAF BNZ	
Used animal semen/embryo containers (not associated with an importation of viable genetic material) Used veterinary equipment. Bird, cat, dog or rodent cages and equipment	Contamination with hair or other organic material	EAP5	<p>If contamination is found, the equipment shall be cleaned Remove any residues for destruction by incineration, sterilisation or deep burial. Then treated with an approved disinfectant. (For MAF approved disinfectants refer: http://www.maf.govt.nz/biosecurity/border/transitional-facility/disinfectants.pdf)</p> <p>OR Heat treating the equipment at 60 degrees Celsius for at least 10 minutes.</p> <p>OR Fumigate with 37% formalin at a rate of 20 ml/m³ and 16g potassium for 8 hr at Atm, 18°C, 80-90% humidity.</p> <p>Risk goods require approval from MAF BNZ for deep burial except for plant products (uninfected) where there is a standing approval.</p>	MAF STD; ANIEQPIC. ALL	<p>Clean equipment or clean used containers do not require treatment.</p> <p>Items must be unpacked so as to completely expose the goods for formalin treatment.</p>
Used equipment associated with llamas, cattle, buffalo, pigs, sheep and goats containing absorbent material		EAP5a	Treating the equipment with an approved disinfectant	MAF STD; ANIEQPIC. ALL	

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Used equipment associated with marine aquatic animals or activities		EAP5b	<p>EITHER: Soaking the equipment in water kept above 60 degrees Celsius for at least 1 minute;</p> <p>OR Soaking the equipment for 10 minutes in, or if a hard surface wiped with, Iodine solution at 250mg per litre (Betadine ®);</p> <p>OR Soaking the equipment for 10 minutes in, or if a hard surface wiped with, Household bleach at 50mg Cl per litre;</p> <p>OR Soaking the equipment for 10 minutes in, or if a hard surface wiped with, Sodium hydroxide solution consisting of 1% hydroxide and 0.1 % Teepol ®.</p>	MAF STD; ANIEQPIC. ALL	
Used equipment associated with fresh water aquatic animals or activities (not including felt-soled footwear)	Does not meet the standard	EAP5c	<p>Either: Freeze until completely solid; OR</p> <p>Soaking the equipment in a solution of 5 % volume/volume antiseptic hand cleaner (chlorhexidine or chloroxylenol based) for at least 1 minute. (a 5% solution is 500mL or 2 cups with water added to make 10L); OR</p> <p>Soak in water kept above 45°C (uncomfortable to the touch) for at least 20 minutes; OR</p> <p>Soak in water kept above 60°C for at least 1 minute; OR</p> <p>Soak in a household bleach solution with a minimum concentration of 2% - 200 mls of bleach to 10 L of water for at least 1 minute; OR</p> <p>Soak in a solution of nappy cleaner (with a minimum of 5% - 500 g of oxidizing powder to 10 L of water for at least 1 minute; OR</p> <p>Soak in a detergent solution (with a minimum concentration of 5% - 500 ml of detergent to 10 L of water) for at least 1 minute; OR</p> <p>Soak in a salt solution (with a minimum concentration of 5% - 500 g of salt to 10 L of water for at least 1 minute.</p>	MAF STD; ANIEQPIC. ALL	

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
<i>Used equipment containing absorbent material (other than felt soles)</i>		EAP5d	<p>EITHER; Freezing the equipment until completely solid;</p> <p>OR Soaking 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;</p> <p>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;</p> <p>OR Soaking the equipment to a point when all absorbent areas of the item have been saturated with water kept above 45 degrees Celsius, THEN treated on all surfaces with a soak of at least 20 minutes in water kept above 45 degrees Celsius;</p> <p>OR Soaking the equipment to a point when all absorbent areas of the item have been saturated with water at no less than 60 degrees Celsius, THEN treated on all surfaces with water kept above 60 degrees Celsius for at least 1 minute.</p>	MAF STD; ANIEQPIC. ALL	
<i>Used felt-soled fishing footwear (waders and boots)</i>		EAP5e	<p>EITHER Freezing the entire felt sole until completely solid;</p> <p>OR Completely immersing the entire felt sole in water kept above 45 degrees Celsius containing 5 % volume/volume concentration of dishwashing detergent or nappy cleaner for at least 30 minutes;</p> <p>OR Completely immersing the entire felt sole in water kept above 45 degrees Celsius for at least 40 minutes.</p>	MAF STD; ANIEQPIC. ALL	

Commodity/Product	Reason for Treatment	Short Code	Treatment procedure to follow	Source	Comments
Used horse covers, rugs, saddles, harnesses, bridles, bits, reins, grooming accessories, veterinary equipment, birthing equipment, used semen containers, horse floats and other horse equipment	Viruses	EAP6	Clean in hot soapy water and then either treat with an approved disinfectant; OR Fumigate with 37% formalin at a rate of 20 ml/m ³ and 16g potassium for 8 hrs at Atm, 18°C, 80-90% humidity; OR Heat-treated at 60°C for 10 minutes.	MAF STD; ANIEQPIC. ALL	Equipment must be treated when there is visible wool, blood, faeces and/ or organic matter after contamination is removed Horse clothing must not have insects – EAP1 applies for insects
Used sheep/goat shearing equipment	Wool, blood, faeces & organic matter contamination or mandatory for some countries listed in ANIEQPIC. ALL	EAP7	Clean in hot water (any residues shall be removed for destruction) and then treat with an approved disinfectant; OR Fumigate with 37% formalin at a rate of 20 ml/m ³ for 8 hrs at Atm, 18°C, 80-90% humidity.	MAF STD; ANIEQPIC. ALL	Clean equipment from specified countries does not require treatment

FOREST PRODUCE

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Woodware, Used Wood panels, New or unused Poles, Piles, Rounds and Sleepers (including railway sleepers) less than 300 mm in thickness or cross-section; Sawdust, Wood Chips, Wood Shavings and Wood Wool,	Invertebrates	FPT1	MBr	Atm	80 g/m ³	10 +	24 hrs	MAF STD; Wood Packaging	20 minutes of fan at the start, filleted or otherwise separate layers; maximum thickness of timber 200mm. Plastic wrapping opened or perforated
			MBr	Vacuum	64 g/m ³	10 +	4 hrs	MAF BNZ	
			Phosphine	Atm	1.41 g/m ³	10-30C	72 hrs		50mm max thickness, <25% moisture content
			HT	Atm		56 +	30 mins	MAF STD; Wood Packaging: ISPM 15	Note: maintain 100% humidity for fragile products or wood prone to warping.
			Sulphuryl fluoride	Atm	80 g/m ³	15 +	24 hrs		20 minutes of fan
Sawn Wood; Wood Packaging; Kava sticks; and Other miscellaneous products e.g. pine/conifer cones, needles, twigs, smudge sticks etc.	Fungi, Extraneous organic material and Devitalization	FPT2	HT			70	4 hrs		See Note 2 below
			Incineration	Incinerate to ash at a MAF- approved facility or carried out under supervision by MAF BNZ					Risk items must be transported to treatment site in pest-proof containers, e.g. airtight container with a secure fitting lid, or completely wrapped with plastic.
			Autoclaving	100 kPa		120	10 min	MAF BNZ	
			Irradiation	PPT2					

Note 2: 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 FPT4; that is, with increased thickness of wood the exposure time must be increased.

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Wood Thickness	Temp. °C	Time	Source	Comments	
cont...	Extraneous organic material	FPT3	Decontaminate by sweeping and/or washing off and to be collected and destroyed in an approved manner.						
	Fungi	FPT3a	Deep burial subject to approval from MAF BNZ at an approved commercial landfill within the metropolitan area. Must be deep enough to allow a minimum of 2 metres land-fill coverage to be placed over the forest produce.						Risk items must be transported by pest-proof containers
	Pathogens (including fungi), Extraneous organic material (e.g. leaves, twigs, soil), Devitalization (e.g. un-processed burls)	FPT4	HT	0-25 mm	70	4 hrs	MAF BNZ	Unprocessed burls and potentially viable materials, in particular, must be rendered nonviable (devitalization) Note: maintain 100% humidity for fragile products or wood prone to warping.	
			HT	25-38 mm	70	5 hrs			
			HT	38-50 mm	70	6 hrs			
			HT	50-75 mm	70	8 hrs			
			HT	75-100 mm	70	10 hrs			
			HT	100-150mm	70	14 hrs			
			HT	150-200mm	70	18 hrs			
			HT	200-250mm	70	22 hrs			
HT	250mm +	70	26 hrs						
Note 3: The Forest Produce items listed in the commodity/product column are defined as per the relevant Import Health Standard.									

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pressure/Humidity	Dosage	Temp. °C	Time	Source	Comments		
Non compliant Wood Packaging (as defined in the Wood Packaging Import Health Standard)	ISPM 15 Compliance OR Invertebrates	ISPM 15	HT	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.						MAF STD; Wood Packaging: ISPM 15	All wood packaging material must be heated to a minimum internal wood core temperature of 56°C for 30 minutes.
				MBr	Atm	48 g/m ³	21 +	24 hrs	MAF STD; Wood Packaging: ISPM 15		
			56 g/m ³			16 +	24 hrs				
			64 g/m ³			10 +	24 hrs				
Bamboo, Cane, Rattan, Willow And Bark (includes bark chips, cork, bark pencils, cinnamon bark and other items containing unprocessed bark)	Insects	FPT5	MBr	Atm	72 g/m ³	10-11	24 hrs	MAF STD: Bamboo, cane, willow, or rattan from all countries	Fan circulation minimum 20 minutes at start of fumigation Plastic wrapping opened or perforated		
			MBr	Atm	64 g/m ³	11-15	24 hrs				
			MBr	Vacuum	64 g/m ³	10 +	4 hrs				
			MBr	Atm	56 g/m ³	16-20	24 hrs				
			MBr	Atm	48 g/m ³	20 +	24 hrs				
			HT			56	30min	Core temp ISPM 15			

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Used Poles, Piles, Rounds, Sleepers (including railway sleepers) And Wood pieces larger than 300 mm in thickness or cross-section	Invertebrates	FPT6	MBr	Atm	240 g/m ³	10 +	24 hrs	MAF STD: Used Poles, Piles, Rounds, Sleepers from all Countries	Fan circulation minimum 20 minutes at start of fumigation.
	Invertebrates, Pathogens, Wood fillets spaced more than 200mm apart and Extraneous organic material	FPT7	HT			70	26 hrs		Note: maintain 100% humidity for fragile products or wood prone to warping. See Note 2 above.
Wooden decking (associated with used vehicles etc.)	Fungi in wooden decking	Refer to Commodity/Product "Vehicles, machinery, containers, parts, tyres, equipment (not used with animals) 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 removed and destroyed.							

STORED PRODUCTS

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pressure/Humidity	Dosage	Temp. °C	Time	Source	Comments			
General Stored Products in bags & cartons only up to 50kg. See Note 4 below <i>(Refer below for additional treatments of specific stored product items)</i>	Insects (Insecta) except <i>Trogoderma</i> spp.	SPT1	MBr	Atm	32 g/m ³	21 +	24 hrs	FAO 79	Fan circulation minimum 20 minutes at start of fumigation			
			MBr	Atm	40 g/m ³	16-20	24 hrs					
			MBr	Atm	48 g/m ³	10-15	24 hrs					
			MBr	Vac:91 kPa	48 g/m ³	10-15	3 hrs					
			MBr	Vac:91 kPa	40 g/m ³	16-20	3 hrs					
			MBr	Vac:91 kPa	32 g/m ³	21 +	3 hrs					
			Phosphine	Atm	2 g/m ³	10-15	7 days	FAO 79				
			Phosphine	Atm	2 g/m ³	16-20	6 days					
			Phosphine	Atm	2 g/m ³	21-25	5 days					
			Phosphine	Atm	2 g/m ³	26 + (max 35)	4 days					
			Freezing				-18 or less	7 days		MAF STD 152.02		
			HT			Atm		56 +		30 mins	MAF BNZ	The core temperature of product must reach 56°C

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pressure/Humidity	Dosage	Temp. °C	Time	Source	Comments
Bulk containerised stored products, 50kg plus See Note 4 below (Refer below for additional treatments of specific stored product items)	Insects (Insecta) except <i>Trogoderma</i> spp.	SPT2	MBr	Atm	48 g/m ³	21 +	24 hrs	FAO 79	Fan circulation minimum 20 minutes at start of fumigation
			MBr	Atm	64 g/m ³	16-20	24 hrs	FAO 79	
			MBr	Atm	80 g/m ³	10-15	24 hrs	FAO 79	
			Phosphine	Atm	2 g/m ³	10-15	7 days	FAO 79	
			Phosphine	Atm	2 g/m ³	16-20	6 days	FAO 79	
			Phosphine	Atm	2 g/m ³	21-25	5 days	FAO 79	
			Phosphine	Atm	2 g/m ³	26 + (max 35)	4 days	FAO 79	
General Stored Products in bags & cartons, and bulk containerised See Note 4 below	<i>Trogoderma</i> spp only	SPT3	MBr	Atm	40 g/m ³	32 +	12 hrs	FAO 50	Fan circulation minimum 20 minutes at start of fumigation. Note: High MBr dosages used may not be acceptable on products for human, consult NZ Food Safety Authority.
			MBr	Atm	56 g/m ³	27-31	12 hrs	FAO 50	
			MBr	Atm	72 g/m ³	21-26	12 hrs	FAO 50	
			MBr	Atm	96 g/m ³	16-20	12 hrs	FAO 50	
			MBr	Atm	120 g/m ³	10-15	12 hrs	FAO 50	
			HT			60 +	30 mins	MAF BNZ	The core temperature of product must reach 60°C.
<p>Note 4: 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 stockfood. Stored products do not include fresh fruit and vegetables.</p>									

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
General Stored Products in bags & cartons, and bulk containerised See Note 4 above	Devitalization, Fungi & insects including <i>Trogoderma</i> spp	SPT4	HT	40% RH (min)		85	15 hrs	FAO 50	Destroys viability e.g. of seeds, nuts and pathogens.
			Autoclave	Pres:100 kPa		120	30 mins	FAO 50	
General Stored Products in bags & cartons	Mites	SPT5	MBr	Atm	32 g/m ³	21 +	24 hrs	MAF BNZ	Re-fumigate after 12-14 days. Note: High MBr dosages used may not be acceptable on products for human consumption, consult NZ Food Safety Authority.
				Atm	40 g/m ³	16-20	24 hrs	MAF BNZ	
				Atm	48 g/m ³	10-15	24 hrs	MAF BNZ	
Stored products; bulk containers	Mites	SPT6	MBr	Atm	48 g/m ³	21 +	24 hrs	MAF BNZ	Re-fumigate after 12-14 days. Note: High MBr dosages used may not be acceptable for human consumption, consult NZ Food Safety Authority.
				Atm	64 g/m ³	16-20	24 hrs	MAF BNZ	
				Atm	80 g/m ³	10-15	24 hrs	MAF BNZ	
Citrus Products (including dried peel and dried citrus belonging to genera <i>Citrus</i> , <i>Fortunella</i> & <i>Poncirus</i>) Dried herbs and leaves	Bacteria, micro-organisms	SPT7	HT	40% RH (min)		85	8 hrs	MAF BNZ	Treatment kills pathogens
			Autoclave	Pres:100 kPa		120	30 mins	MAF BNZ	

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Stockfood (plant derived animal feed)	Devitalization / Pathogens	SPT8	HT	40% RH (min)		85	15 hr	MAF BNZ	Destroys viability e.g. of seed and pathogens
			Autoclave	Pres:100 KPa		120	30 min	MAF BNZ	
			Irradiation		25 kGy			MAF BNZ	
	Insects	SPT2	MBr						
	Trogoderma	SPT 3	MBr						
Nuts	Insects	SPT 9	MBr	Atm	16 g/m3	21	12 hr	MAF BNZ	
				Vac 91kPa	48 g/m3	21	1 hr	MAF BNZ	
Nuts	Devitalisation	SPT4	HT						
Plant products	Devitalisation	SPT10	Grinding						No whole seeds remaining

PLANT PRODUCTS

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
All Plant Products including broom millet, corn dollies, dried flowers & foliage, millet spray, straw, etc.	Devitalization (plant & seed) and Pathogens (e.g. fungi, bacteria)	SPT4	HT	40%RH (min)		85	15 hr	FAO 50	Destroys viability (e.g. plant & seed) and kills fungi, bacteria etc. Autoclaving appropriate for nostoc commune.
			Autoclave	Pres:100 KPa		118	30 min	FAO 50	
	Insects (Insecta) except <i>Trogoderma</i> spp.	SPT1							
		PPT1	HT	Dry heat			70	4 hr	MAF BNZ
	<i>Trogoderma</i> spp only	SPT3	MBr	Use rates as prescribed for <i>Trogoderma</i> spp found in Stored Products SPT3					Fan circulation minimum 20 minutes at start
HT			Use rates as prescribed for <i>Trogoderma</i> spp found in Stored Products SPT3						
Authorised Plant Products not for human consumption	Renders incapable of procreation (e.g. seed, Arthropods, pathogens etc.)	PPT2	Irradiation		25 kGy			MAF BNZ	
Brushwood fencing ex China	Devitalization and Pathogens	SPT4						MAF BNZ	

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Brushwood fencing ex Australia	Devitalization	PPT3	MBr	Atm	240 g/m ³	10-15	24 hrs	MAF BNZ	
		SPT4	HT	40%RH (min)		85	15 hr	FAO 50	
Mosses & Lichens	Devitalization	SPT4							

NURSERY STOCK

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Active ingredient	Application Rate	Time	Source	Comments
All whole plants and cuttings e.g. cuttings, scions, budwood, marcots, off-shoots	Insects (Insecta) Only See Note 5 below	NST1	Organophosphorous	Acephate	0.75 g a.i./L of dip/spray	2-5 mins	MAF STD: 155.02.06	Non-dormant material only
			Organophosphorous	Chlorpyrifos	2.4 g a.i./L of dip/spray	2-5 mins		Non-ionic surfactant required for dipping
				Dimethoate	As per label	2-5 mins		Non-dormant material only
				Pirimiphos-methyl	0.475 g a.i./L of dip/spray	2-5 mins		Non-ionic surfactant required for dipping
				Acephate	0.75 g a.i./L of dip/spray	2-5 mins		Non-dormant material only
			Carbamate	Carbaryl	As per label	2-5 mins		
			Diacylhydrazine	Tebufenozide	As per label	2-5 mins		
			Neonicotinoid	Imidacloprid	0.16 g a.i./L of dip/spray	2-5 mins		Non-dormant material only
			Pyrethroid	Deltamethrin	As per label	15 mins		
			Pyrethroid	Fenvalerate	As per label	15 mins		
			Spinosyns	Spinosad	As per label	2-5 mins		Dip/spray at room temperature

NOTE 5: The above contact and systemic insecticidal dips may be used instead of fumigation but only if the packaging material is separately fumigated or destroyed i.e. not re-used. **Two chemicals must be used for any treatment, one organophosphorous and one other insecticide must be used.** Plants are to be immersed completely or all surfaces sprayed to runoff. 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.

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments	
All whole plants and cuttings e.g. cuttings, scions, budwood, marcots, off-shoots	Insects	NST2	MBr	Atm	48 g/m ³	10-15	2 hrs		Packaging to be dipped or fumigated as per FVT7 or destroyed	
			MBr	Atm	40 g/m ³	16-21	2 hrs			
			MBr	Atm	32 g/m ³	22-27	2 hrs			
			MBr	Atm	28g/m ³	28-32	2hrs			
	Insects	NST3	Hot Water AND Chlorpyrifos + non-ionic surfactant		2.4 g a.i./L	24C then 45C	2hrs 3hrs 2 mins		Maximum of 2 times use of solution or as per manufacturer's recommendations Packaging to be dipped or fumigated as per FVT7 or destroyed	
	Spiders	NST4	Chlorpyrifos		0.24 g a.i./L	2 mins				
	Molluscs	NST5	Methiocarb		0.75 g a.i./L	5 mins				
	Mites	NST6	Apply NST2 twice – treatment needs to be repeated after 14 days OR Abamectin, 0.009 g a.i per litre plus non-ionic surfactant for 2-5 mins							Packaging to be dipped or fumigated as per FVT7 or destroyed
	Bacteria/ Fungi/ Virus		Hold consignment. Following identification contact MAF BNZ.							Packaging to be treated the same as the product

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Active ingredient	Dosage	Time	Source	Comments	
Dormant bulbs, root divisions, corms, tubers and rhizomes	Insects	NST7	NST2, OR NST3, OR apply two active ingredients from different chemical groups below.						Packaging to be dipped or fumigated as per FVT7 or destroyed
			Neonicotinoid	Diazinon	0.5 g a.i./L	5mins			
			Phenylpyrazole	Fipronil	40 mg/L	5 mins		non-ionic surfactant required	
			Organophosphorous	Pirimphos-methyl	3.25 g a.i./L	5mins		non-ionic surfactant required	
			Organophosphorous	Imidacloprid	0.16 g a.i./L	5 mins			
	Nematodes	NST8	NST2 + immersion in Fenamiphos, 1g a.i./L for 1 hour OR Hot water at 44°C for 3 hr (pre warm at 24°C for 2 hr) + immersion in Fenamiphos, 1 g a.i./L for 1 hour						Maximum of 2 times use or as per manufacturers recommendations. Packaging to be dipped or fumigated as per FVT7 or destroyed
	Mites	NST9	Apply NST2 twice – treatment needs to be repeated after 14 days OR Abamectin, 0.009 g a.i per litre plus non-ionic surfactant for 2-5 mins OR Hot water at 44°C for 3 hr (pre warm at 24°C for 2 hr).						Packaging to be dipped or fumigated as per FVT7 or destroyed

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Active ingredient	Dosage	Time	Source	Comments
Dormant bulbs, root divisions, corms, tubers and rhizomes	Fungi	NST10	One of the following a, b, c, d or e;					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 or fumigated as per FVT7 or destroyed
			a) Sodium hypochloride 10% a.i., Ph 6.5-7 for 5 mins with agitation					
			b) Bromo-chloro-dimethylhydantoin, 8.1-16 g/L					
			c) Formaldehyde, 0.4% for 2hrs					
			d) Peroxyacetic acid, 80 ppm for 5 mins, wetting agent required					
			e) Chlorine-dioxide, 80mg/L for 5 mins with agitation					
AND								
Hot water at 44°C for 3 hr (pre warm at 24°C for 2 hr)								
OR								
dipped in two active ingredients from different chemical groups below.								
			Benzimidazole (wetting agent required)	Thiabendazole	1-1.3 g/L	15-30mins		
			Benzimidazole	Thiophanate-methyl	0.75 g/L	15-30mins		
			Dimethyldithio-carbamate	Thiram	11.2 g/L	15mins		
			Imidazole	Prochloraz	0.25 g/L	15mins		
			Strobilurin	Azoxystrobin	0.95 g/L	15mins		

FRESH FLOWERS AND FOLIAGE

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Fresh Flowers and Foliage only	Snails (Mollusca); except Giant African Snail	FNS4	MBr	Atm	48g/m ³	12 +	24 hrs	MAF BNZ	Fan circulation minimum 20 minutes at start of fumigation. See Note 6 below.
		NST5	Methiocarb						
	Giant African Snail (Mollusca)	VCE2	The high dosages of MBr which would be required here are likely to be phytotoxic to plants.						Fan circulation minimum 20 minutes 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 MAF BNZ.						100% inspection & removal may be an option.
	Only for ants, aphids, earwigs, moths, psocids, thrips	FNS6	Pestigas (pyrethrum + CO ₂) + ECO2 Fume (Phosphine + CO ₂).	For rates & details refer Note 7 below	15 +	15 hrs	Approved by MAF BNZ	For requirement to re-inspect, see Note 8 below	
Mites.	FNS6	Same as FNS6 but longer				24hrs		Jamieson et al 2005	

Note 6: This MBr treatment for snails on fresh flowers, foliage and nursery stock may be permitted only if a full re-inspection is conducted after the MBr 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 MAF BNZ notified immediately.

Note 7: Spray with Pestigas (synergised pyrethrum with carbon dioxide as a carrier gas) at 4.4 g/m³ (within an airtight enclosure or fumigation cell) and hold for 10 minutes. This is followed by a spray with ECO2 Fume (Phosphine with carbon dioxide as a carrier gas) to give a concentration of 700 ppm a.i./m³ and hold for 15 hours at a minimum air temperature of 15°C.

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Active ingredient	Dosage	Time	Source	Comments
Fresh Flowers and Foliage only	Insects (Insecta) only	FNS7	Contact insecticides: (Choose one, plus a systemic insecticide)	800 g/L diazinon	0.5 ml/litre of water	15 mins	MAF STD 155.02.06	The contact and systemic insecticidal dips may be used instead of fumigation but only if the packaging material is separately fumigated or destroyed i.e. not re-used. These chemical dips are not acceptable on goods for human consumption.
				100 g/L dichlorvos	4 ml/litre of water	15 mins		
				25 g/L permethrin	1 ml/litre of water	15 mins		
				475 g/L primiphos methyl	1 ml/litre of water	15 mins		
				240 g/L taufluvallinate	0.4 ml/litre of water	15 mins		
			Systemic insecticides: (Choose one, plus a contact insecticide)	195 g/L acephate (soluble concentrate)	0.8 g/litre of water	15 mins	MAF STD 155.02.06	Two chemicals (active ingredients) must be used for any treatment, one contact insecticide and one systemic insecticide must be used. Plants are to be immersed completely in the chemicals. The chemicals, if compatible, may be combined as a single treatment.
				970 g/kg acephate (water soluble granule)	1 ml/litre of water	15 mins		
				500 g/L dimethoate	0.4 ml/litre of water	15 mins		
				600 g/L methamidaphos	1.6 ml/litre of water	15 mins		
				350 g/L imidacloprid	0.45 ml/litre of water	15 mins		
<p>Note 8: 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 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 MAF BNZ of the results.</p>								

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Dosage	Time	Source	Comments
Fresh Flowers and Foliage only	Insects (Insecta) only	FNS7 cont...	Mineral Spraying oils or Surfactants				See Note 9 below
		FVT1	Methyl Bromide				
	Fungi only	FNS8	125 g/L chlorothalonil & 125 g/litre thiophanate-methyl (e.g. Greenguard) Or 250 g/L chlorothalonil & 250 g/L thiophanate-methyl (e.g. Taratek 5F) Or Other treatments as approved by MAF BNZ	6 ml/litre of water 3 ml/litre of water	15 mins 15 mins	MAF BNZ NZ Agrichemical Manual	See Note 9 below. 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.
Devitalisation	FNS9	360 g/L Glyphosate (e.g. based on 0.5 % Roundup)	Immerse the stems etc to within 50 mm of the flowers for 20 minutes. The temperature should be a minimum of 15°C high enough to ensure transpiration is taking place.			Refer to MAF STD 152.09.05; this treatment is required only for stems of flowers and foliage requiring Additional Declaration 3, i.e. treatment to render the consignment non-propagatable.	
<p>Note 9: 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 min to 5 min 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 min.</p>							

FRESH FRUIT AND VEGETABLES

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pressure/Humidity	Dosage	Temp. °C	Time	Source	Comments
Fresh Fruit and Vegetables (including Pineapples) See Notes 10 and 11 below (Refer below for additional treatments for some specified fruits and vegetables)	Insects (except fruit flies) Mites and Slugs Spiders ; except in grapes & bananas specified below in FVT6, FVT7 & FVT8	FVT1	MBr	Atm	48 g/m ³	10-15	2 hrs	FAO 79/BNZ	Pulp temperature to be used. Fan circulation minimum 20 minutes at start of fumigation.
			MBr	Atm	40 g/m ³	16-21	2 hrs	FAO 79/BNZ	
			MBr	Atm	32 g/m ³	22- 27	2 hrs	FAO 79/BNZ	
			MBr	Atm	24 g/m ³	28 - 32	2 hrs	FAO 79/BNZ	
			MBr	Atm	16 g/m ³	33 - 36	2 hrs	FAO 79/BNZ	
	Spiders (Arachnida)	FVT2	SO ₂ /CO ₂	Atm	1% SO ₂ and 6% CO ₂	16	30 mins	MAF BNZ	Minimum inner carton /box temperature shall be 16 ⁰ C
	Fruit flies	Hold consignment! Following identification, use BORIC (pest data base) and follow instructions.							

Note 10: 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 11: It is not acceptable to use chemical dips for commodity items used for human consumption (e.g. fruit, vegetables, stored products etc.)

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
cont...	Snails (Mollusca), except Giant African Snail	FVT3	MBr	Atm	48 g/m3	12 +	24 hrs	MAF BNZ	Fan circulation minimum 20 minutes at start of fumigation See Note 12 below.
	Giant African Snail (Mollusca)	The high dosages of MBr which would be required here are likely to be phytotoxic to plants and not acceptable for human consumption.							
	Bacteria/ Fungi/ Virus	Hold consignment! Following identification, use BORIC (pest data base) and follow instructions.							
Fruit Fly Host Material (i.e. all fruits and vegetables that are hosts to fruit flies)	Arthropods (Arthropoda including Insecta) & Devitalization	FVT4	Freezing			-18 or less	7 days	FAO 50 MAF STD 152.02	A fully calibrated and reliable thermograph recording may be required for the 7-day exposure period.
Non-Fruit Fly Host Material (i.e. all fruits and vegetables not attacked by fruit flies)	Arthropods (Arthropoda, including Insecta) & Devitalization	FVT5	Freezing			-10 or less	7 days	FAO 50 MAF STD 152.02	A fully calibrated and reliable thermograph recording may be required for the 7-day exposure period.
Bananas & Pineapples	Surface insects	FVT6	HCN	Atm	3 g/m3 (2620ppm)	13.5 +	2 hrs See Note 13 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

Note 12: This MBr treatment for snails on fresh fruit and vegetables may be permitted only if a full re-inspection is conducted after the MBr 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 MAF BNZ notified immediately.

Note 13: If discoids are used rather than bottled hydrogen cyanide (HCN) gas, **add 30 minutes** 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.

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pressure/Humidity	Dosage	Temp. °C	Time	Source	Comments
Grapes	Spiders (Arachnida) from USA	FVT7	MBr	Atm	48 g/m3	12 +	24 hrs	MAF Procedure for spiders in table grapes from the USA	Fan circulation minimum 20 minutes at start of fumigation, inner carton /box temperature to be used.
	Spiders (Arachnida) from Chile and Italy	FVT8	MBr	Atm	48 g/m3	12 +	8 hrs	MAF BNZ	
Root crops associated with the soil e.g. ginger, garlic, taro, yam, cassava, etc.	Nematodes	FVT9	MBr	Atm	48 g/m3	10-15	4 hrs	FAO 50	Pulp temperature to be used. Fan circulation minimum 20 minutes at start of fumigation.
			MBr	Atm	48 g/m3	16-20	3.5 hrs	FAO 50	
			MBr	Atm	48 g/m3	21-26	3 hrs	FAO 50	
			MBr	Atm	40 g/m3	27-31	3 hrs	FAO 50	
			MBr	Atm	32 g/m3	32 +	3 hrs	FAO 50	
			Hot air						
			Hot water						Rates are being investigated
	Weed seeds	FVT10	Reconditioning to remove weed seeds. Verification by inspector supervision or by MAF inspection of a new random sample. Where reconditioning is removal of contamination site (e.g. cutting tops off pineapples) verification is by visual MAF check						
	Soil	FVT11	Either washing or scraping or brushing then reinspection						

SEEDS

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pressure/Humidity	Dosage	Temp. °C	Time	Source	Comments
Seeds For Sowing	Insects (Insecta) except Trogoderma spp.	SST1	MBr	Vac:91 KPa	40 g/m ³	20	3 hrs	FAO 79	Fan circulation minimum 20 minutes at start of fumigation
			MBr	Atm	16 g/m ³	20 +	24 hrs	FAO 79	
			MBr	Atm	24 g/m ³	10-19	24 hrs	FAO 79	
			Phosphine	Atm	2 g/m ³	10 -15	7 days	FAO 79	
			Phosphine	Atm	2 g/m ³	16 - 20	6 days	FAO 79	
			Phosphine	Atm	2 g/m ³	21 - 25	5 days	FAO 79	
			Phosphine	Atm	2 g/m ³	26 + (max 35)	4 days	FAO 79	
Trogoderma spp.	SPT3	MBr	Use rates as prescribed for Trogoderma spp. found in Stored Products. Potential for reduction in germination.					Fan circulation minimum 20 minutes at start of fumigation	
Mites (Arachnida)	SST2	MBr	SST1 then hold securely and re-fumigate after 12-14 days.					MAF BNZ	
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 remove 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. Following identification, Inspector to use the BORIC database and follow instructions.								

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Seeds Not For Sowing	Devitalization of seeds (including contaminant seeds) and Fungi	SST6	Autoclave	Pres:100 kPa		118	30 mins	MAF STD: BNZ-GCFP-PHR	To destroy viability and kill fungi
			HT	40% RH (min)		85	15 hrs		
	Devitalization of seeds (including contaminant seeds)	SPT10	Grinding or milling						No whole seeds remaining

VEHICLES, MACHINERY, CONTAINERS, PARTS, TYRES, EQUIPMENT (NOT USED WITH ANIMALS), ETC

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pressure/Humidity	Dosage	Temp. °C	Time	Source	Comments
Used Buses, Cars, Motor Cycles, Trucks, Utility Vehicles and Vans Tyres – not on rims Used agricultural and forestry machinery Scrap metal Shipping & Air containers	Insects/(includes <i>Trogoderma</i> spp.), Spiders (Arachnida) & gypsy moth	VCE1	MBr	Atm	48 g/m3	21+	24 hrs	MAF STD; BMG-STD-TYRES	For containerised goods, an approved knockdown insecticide must be applied by the fumigator as soon as the container door is open. 20 minutes fan circulation. See Notes Below.
			MBr	Atm	56 g/m3	16 – 20.9	24 hrs		
			MBr	Atm	64 g/m3	11 - 15.9	24 hrs		
			MBr	Atm	72 g/m3	10 –10.9	24 hrs		
Used agricultural and forestry machinery Scrap metal Shipping & Air containers Used vehicle parts	Snails (Mollusca) including Giant African Snail	VCE2	MBr	Atm	128 g/m3	12.5 +	24 hrs	FAO 50	Fan circulation minimum 20 minutes at start of fumigation
			HCN	Atm	48 g/m3	10 +	24 hrs	FAO 50	
Used Vehicles only	Arthropods, not for snails	VCE4	HT			60	10 mins	MAF BNZ Vehicle Risk Analysis	All cavities of vehicle to achieve temperature & continuous fan for duration. At least 1 sensor must be inserted in the carpet layer
Empty Containers, agricultural and forestry machinery	Arthropods, not for snails	VCE4a	HT	Atm		60	30 mins	MAFBNZ Vehicle RA	

Note 14: Warning: It may be advisable to use alternative heat treatment option VCE4 instead of MBr when treating vehicles with leather seats and other sulphur containing components, due to a possibility of tainting, post fumigation.

Note 15: Motorhomes/ caravans to be fumigated at the lowest rate at 21°C, and vented with fans for minimum 2 hrs with all cupboards open.

Note 16: Where containers are being treated for ants then the container must be covered and treated with doors open. All plank floored containers must be covered for fumigation.

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	Dosage	Temp. °C	Time	Source	Comments
Scrap Metal in Containers	All pests	VCE4b	HT	50% Humidity		121	15 mins	MAFBNZ Scrap Metal Std	
						85	15hrs		
Vehicles, machines, parts, tyres, containers etc. Tents, footwear, golf bags, misc equipment etc	Soil, leaves, needles etc.	Decontaminate by sweeping and/or washing off.							Contaminants to be collected and destroyed in an approved manner.
Tents, footwear, golf bags, misc equipment etc	Insects (Insecta) except <i>Trogoderma</i> spp.	SPT1	Treatment options as laid out in SPT1, General Stored products						
Used Vehicles, Trucks, Utilities and Containers with wooden decking (Refer to Note 17 for wood/ fungal rots)	Fungi in wooden decking	VCE5	MBr	Atm	40 g/m3	32 +	12 hrs	MAF BNZ	Fan circulation minimum 20 minutes at start of fumigation
			MBr	Atm	56 g/m3	27-31.9	12 hrs	MAF BNZ	
			MBr	Atm	72 g/m3	21-26.9	12 hrs	MAF BNZ	
			MBr	Atm	96 g/m3	16-20.9	12 hrs	MAF BNZ	
			MBr	Atm	120 g/m3	10-15.9	12 hrs	MAF BNZ	
			Sodium hypochlorite solution (NaOCl)		200ml of 31.5gm/l a.i. NaOCl in 1 litre water		20 mins	MAF BNZ	Steam clean decking first, then liberally apply NaOCl treatment

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pressure/Humidity	Dosage	Temp. °C	Time	Source	Comments
			Didecyl dimethyl ammonium chloride (e.g. Wet & Forget)		200ml of 99g/l DDACl in 1 L water				
		FPT4							See page 17, and Note 2 .
Winches, wire or fibre ropes or cables for agricultural and forestry machinery	Soil, fungal spores, insects, seeds, etc	VCE7	HT			121	15 min	MAF STD; 152.07.04i	
			HT			70	4hrs	MAF BNZ	
Batteries (used)	Hitchhikers including reptiles	VCE8	MBr	Atm	80 g/m ³	10-16+	4 hrs	MAF BNZ	Fan circulation minimum 20 minutes at start of fumigation Note: This does not treat associated wood packaging, use ISPM 15
			MBr	Atm	40g/m ³	16+	4hrs		
			Phosphine	Atm	1.41 g/m ³	10-30	48hrs		
			HT	Atm		56	30 min		Core temperature
Note 17: <i>If decayed portions of decking or cross-members are observed, the wood must be removed and destroyed by incineration or by another approved method.</i>									

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	40% RH (min)		100	25 mins	MAF STD; BMG-STD- SOWTR	Soil must be moist during HT
Peat	Micro-organisms including insects, bacteria, fungi etc	SOT2	Autoclave	Pres:100 kPa		120	30 mins	MAF STD; BMG-STD- SOWTR	
Soil	Contaminant on products not used for human consumption	The soil must be removed for destruction by incineration or any other approved method. The product may be washed, and disinfected where appropriate (i.e. for suspected animal residue)							

WATER

Commodity/Product	Reason for Treatment	Short code	Treatment/ Chemical	Pressure/ Humidity	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 min	MAF STD; BMG-STD-SOWTR	
			Calcium hypochlorite		20 mg/L		Agitate for 1 min then let sit for 30 mins	MAF STD; BMG-STD-SOWTR	
	Mosquito larvae	WAT2	BTI (<i>Bacillus thuringiensis israelensis</i>) larvicide	Liquid concentrate Briquettes	50/50 with water 1 per 12m2		24 hrs	Ministry of Health	Spray for complete coverage of the water or receptacle surface. See Note 18 below

Note 18: 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.

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pool Chlorine/Bleach	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 and the cavity treated with 1% solution of any of the chlorination solutions mentioned. Solution must be sprayed onto surfaces to the point of runoff such that the solution stays in place for at least 5 seconds.
				15.4 g	10 g	1 L	1 %		
				77 g	50 g	5 L	1 %		
				154 g	100 g	10 L	1 %		
			Granular pool chlorine (700 g/kg calcium hypochlorite)	1 kg	700 g	70 L	1 %		
				14.3 g	10 g	1 L	1%		
				71.5 g	50 g	5 L	1 %		
				143 g	100 g	10 L	1 %		
			Liquid pool chlorine (150 g/kg benzalkonium chloride)	1 kg ≈ 1 L	150 g	15 L	1 %		
				66.7g ≈ 66.7ml	10 g	1 L	1 %		
				335 g ≈ 334 ml	50 g	5 L	1 %		
				667 g ≈ 667 ml	100 g	10 L	1 %		
			Liquid bleach (4 % sodium hypochlorite)	1 L	4 %	4 L	1 %		
				250 mL	4 %	1 L	1 %		
				1.25 L	4 %	5 L	1 %		
				2.5 L	4 %	10 L	1 %		

Commodity/Product	Reason for Treatment	Short code	Treatment/Chemical	Pool Chlorine/Bleach	Active Ingredient	Water Volume	Concentration	Source	Comments
Pooled water on used machinery etc. Small receptacles , 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)	100 g	65 g	20 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 minutes and then emptied on the same day after treatment. Following are mixing quantities to obtain 0.3 to 0.35 % chlorination solution. Generally used for small receptacles up to 200L (volume) and includes those with a “tide mark”. Warning signs must be placed on the treated receptacles until emptied.
				50 g	32.5 g	10 L	0.33%		
				500 g	325 g	100 L	0.33%		
			Granular pool chlorine (700 g/kg calcium hypochlorite)	100 g	70 g	20 L	0.35 %		
				50 g	35 g	10 L	0.35 %		
				500 g	350 g	100 L	0.35 %		
			Liquid pool chlorine (150 g/kg benzalkonium chloride)	100 g ≈ 100 ml	15 g	5 L	0.30 %		
				200 g ≈ 200 ml	30 g	10 L	0.30 %		
				2 kg ≈ 2 L	300 g	100 L	0.30 %		
			Liquid bleach (4 % sodium hypochlorite)	100 ml	4 %	1.2 L	0.33 %		
				833 ml	4 %	10 L	0.33 %		
				8.33 L	4 %	100 L	0.33 %		

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Ministry of Agriculture and Forestry
Te Manatū Ahuwhenua, Ngāherehere