

Audit Guideline - Administration and Document		
Requirement	Guideline	Comments
Management responsibility	Responsibility of the management of fumigation operations should be defined and documented. Sufficient resources should be evident for the amount of work claimed. Sufficient accredited fumigators should be employed to adequately supervise the amount of work claimed. Copy of the current Standard and Ready Reckoner available for the fumigators. Procedures should be in place to check for up dates to the Standard. Every 3-6 months is adequate.	
Fumigation administration	All information necessary to conduct the fumigation should be documented and provided to the fumigation in a clear and consistent manner. Fumigation and related records should be kept for a minimum of 2 years. Documents and related records relating to a specific fumigation should be kept together. Related records and documents should be linked using a unique identifier such as the fumigation certificate number or a job number. Training records for non-accredited fumigators performing standard fumigations can provide confidence that they are adequately trained.	
Purchasing and usage records	Stock control records such as invoices, usage logs and stock-takes should be kept for the following consumables; Fumigant TLV detection tubes Filter canister The usage records should be link to the fumigations they were used for. The usage records should reflect the amount of work claimed	
Record of fumigation	Information should be recorded on-site at the time the activity was performed. Don't record information that is unnecessary or is the same for all fumigation. For example a vaporiser must be used for all AFAS fumigations so it is redundant to include a field asking if a vaporiser was used.	
Fumigation certificate	The certificate must include: Provider letterhead ID number Description of goods and/or target commodity Consinnment identification details Fumigation date Minimum forcast temperature Dose rate used Duration Accredited fumigator signature. It should also show: Country of origin Port of loading and discharge Exporter and importer details Consignment suitability Free air space Impervious surfaces and wrapping Timber thickness and spacing Enclosure type Final TLV reading	
Overall comment:		

Audit Guideline - Methyl Bromide Fumigation Record					
Requirement	Yes	No	Rating	Guideline	Comments
Dose Rate The correct dose rate must be used			Major	A description of the goods and/or target commodity should be included The dose rate should comply with: Import Permit ICON Quarantine direction Where an exporter insists on a dose rate different to the standard dose rate the fumigator should present supporting documentation.	
Temperature The dose rate must be adjusted for temperature below 21			Minor	The forecast minimum temperature must be recorded. Concentration on the Ready Reckoner must be read on the adjusted dose rate column.	
Volume The volume of the fumigation enclosure must be calculated from the measured dimensions			Minor	External dimensions for sheeted enclosures. Internal dimensions for pressure tested containers. Internal dimensions for permanent chambers including any ducting or circulation equipment external to the chamber	
Dose The correct dose must be applied			Major	Compensation must be made for fumigant mixtures containing less than 100% methyl bromide The dose should be rounded up to the next increment that can be accurately measured by the dispensing equipment	
Initial Concentration Readings Readings must be taken at the start of the fumigation to determine if the concentrations are all at or above the standard and in equilibrium			Critical	The readings and the time they were taken must be recorded The minimum concentration allowed at equilibrium is: within 1 hour - 75% or more of the initial dose over 1 hour - 70% or more of the initial dose The concentrations must be within 15% of each other If equilibrium is achieved this is the start of the exposure period	
Final Readings Readings must be taken at the end of the exposure period			Critical	The readings and the time they were taken must be recorded The concentrations must all be at or above the standard for the fumigation to be considered successful	
Top-up Topping-up is permitted if concentrations are above the minimum top-up level at all monitoring points			Critical	Top-up amount not to exceed the maximum top-up level Top-up during the exposure period does not require a time extension Fumigation topped-up at the end of the exposure period must be extended by 4 hours. Final readings must be taken and be at or above the standard for the original exposure period Only one end-point top-up is permitted Top-ups are not permitted for fumigation of less than 12 hours	
TLV At the completion of the fumigation concentrations of methyl bromide must be at or below the TLV (5ppm)			Major	The actual concentration measured should be recorded	
Comments:					

Audit Guideline - MethylBromide Fumigation Equipment					
Requirement	Yes	No	Rating	Guideline	Comments
Vaporiser A vaporiser must be used for all methyl bromide fumigation			Critical	The details of the specification and design of recommended vaporiser are in the appendix 10 of AQIS Methyl Bromide Fumigation Standard Version 1.7 November 2011 Lower capacity vaporisers can be used if the fumigator knows how to manage the flow rate to ensure the methyl bromide is fully vaporised.	
Sheets The fumigation sheet must be impervious to methyl bromide and free from holes			Major	If possible a manufacturers declaration should be obtained to indicate that the sheet are impervious to methyl bromide. The sheet should be inspected to check if they are suitable The sheet should be large enough for the size of the enclosure.	
Snakes The fumigator must have sand snakes or water snakes			Major	There should be enough snakes for the number of fumigation normally performed at any one time.	
Snakes Sand snakes must be filled 65-75% full			Minor	The sand snakes should be filled with clean dry sand The method used to seal the sand snakes should not create sharp edges that may damage the sheet	
Monitor tubes Monitor tubes must be available			Critical	The tubes should be <ul style="list-style-type: none"> - Crush-proof - Long enough to extend outside the risk area - Free from kinks and blockages - Fit the concentration measuring equipment. 	
Supply pipes Supply pipes must be available.			Major	The inlet, heat exchange coil and outlet pipe should be the same or of increasing internal diameter to reduce the build up of back pressure.	
Fans Fan must be available			Major	The fan capacity should be sufficient for the size of the enclosure. 20 air changes per hour is recommended to the fan capacity for a 20 ft container should be 12m ³ /min or more.	
Concentration Measuring Does the fumigator have suitable concentration Measuring equipment			Critical	The measurement range should be between 2-100g/m ³ . However, the concentration for some fumigations may exceed this range particularly for Giant African Snail countries so the equipment may need to measure higher concentrations	
Monitor Filters Is the measureing equipment fitted with the appropriate filters as recommended by the manufacturer and are they in good condition			Major	CO ₂ filters Moisture filters	
Leak Detection Does the fumigator have suitable leak detection equipment			Major	Electronic leak detectors serviced and calibrated in accordance with the manufacturer's instruction Each instrument should be uniquely and permanently identified, preferably using the serial number Halide lamps should be regularly cleaned especially the copper element.	
TLV Measurement Does the fumigator have TLV detection equipment and can it reliably measure concentration down to 1 ppm?			Major	If using stain tubes the correct brand and model of pump must be used	
Respirators Full face respirators or SCBA must be available for use by the fumigators			Minor	The respirators should be regularly cleaned paying particular attention to the valves and seals	
Respirator canister AX canister must be available for use with the respirators for Mbr			Minor	The gas filter canisters should be used and replaced in accordance with the manufacturer's instruction.	

Audit Guideline - MethylBromide Fumigation Equipment					
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Warning signs Are warning signs available for the risk			Minor	The warning signs should: - Indicate toxic gas is in use - Include appropriate warning symbols - Be in the appropriate language - Show the fumigator's contact details Create a physical barrier around the risk area with ropes and stands	
Pressure Test Equipment If fumigations are done in un-sheeted containers or permanent fumigation chambers, suitable pressure test equipment must be available			Major	Finger manifold or equivalent Suitable pressure gauge capable of measuring between 0-250 Pa Timer Compressed Air	
Fumigation Chambers Permanent fumigation chambers must be pressure tested at least twice a year			Major	The pressure test results should be recorded and available on request	
Miscellaneous Equipment and Consumables				Clamps for securing the fumigation sheets Ropes for preventing excessive flapping of sheeted enclosures Adhesive tape or patches for repairing damaged sheets Adhesive tape for sealing and labelling tubes and pipes Padding to protect the fumigation sheet from sharp edges Tape measure Calculator	
Comments:					

Audit Guideline - Methyl Bromide Fumigation Practices					
Requirement	Yes	No	Rating	Guideline	Comments
Site The fumigation site must be suitable and safe			Minor	Able to be isolated from unprotected personnel Well ventilated Shelter from high winds Access to power	
Floor The fumigation floor must be impervious to fumigant			Major	Flat, smooth and free of stones or other debris that may damage the sheet or prevent gas tight seal. Free of unsealed cracks and/or expansion joints. Any unsealed drains must be at least 1 meter from the edge of the enclosure. Gas proof groundsheets used for unsuitable surface.	
Airspace There must be sufficient free airspace in the enclosure			Major	350 mm intotal made up of: 200mm above 50mm below Remainder at the sides and around the commodity Timber fumigation: Seperation of at least 5 mm in one dimension every 200mm 500mm between the timber and the base and sides of the enclosure	
Timber thickness Timber fumigation must meet thickness limits			Critical	At least one dimension less than 200mm thick?	
Impervious Surface The commodity must be free from impervious coatings and wrapping?			Critical	Timber must have at least one uncoated surface less than 100mm thick. Impervious wrappings must be slashed or removed if they do not with the perforation standard	
Monitoring tubes Monitoring tubes must be in place and positioned correctly			Major	At least one for enclosur<= 30m3 positioned at the top center of the commodity At least three for enclosures> 30m3 positioned at Top back Middle center Front base Extend the outside the risk area Sealing between readings	
Supply Pipes A separate supply pipe is required for each container in a single enclosure.			Minor	Seal the supply pipes after use. Multiple suply pipes will assist with gas distribution.	
Balanced Systems Multiple supply pipe systems must be balanced.			Minor	If a balance system cannot be created then an equal proportion of gas should be released through each pipe in turn.	
Sheet fumigation			Major	Sheet should be protected damage from corners or other sharp objects Sheet should extend at least 500mm from the limit of the seal The sheet should secured in high winds with belly ropes or other means to minimise flapping Loose sheet at the corners should secured with clips or tape. Exit points must tightly sealed At least one door on each container is fully open Inspect the sheets for holes and repair.	
Snakes Sand or water snakes must be used to create a gas tight seal.			Major	Minimum of 2 rows laid like brickwork Flush against the enclosure Use addition snakes at the corners and exit points from the enclosure Fold snakes to fill odd length gaps A single continuous water snake should be used	
Risk area A risk area must be established.			Minor	3m outdoors or 6m indoors In force prior to any gas being used Cleared of personnel not wearing suitable PPE	

Audit Guideline - Methyl Bromide Fumigation Practices

Requirement	Yes	No	Rating	Guideline	Comments
Vaporiser A vaporiser must be used to apply the fumigant(methyl bromide as a hot gas)			Major	Keep the water boiling during gas application if possible. Donot allow the water temperature to fall below 65 °C by slowing down the rate of gas release if necessary. The vaperiser should be inside the risk area	
Volume The enclosure volume must be calculated from			Minor	External dimensions for sheet enclosures Internal dimensions for pressure tested containers or chambers	
Dose The correct dose must be used			Major	Adjustment made for temperature below 21 Compensation applied formixtures containing less than 100% methyl bromide. The calculated dose should be rounded up to the next measurable increment depending on the method of dispensing the fumigant	
Fans Fans must be in the oeration during and immediately after fumigant (MB) is applied to evenly distribute the gas			Minor	At least one fan per container (methyl bromide) Should have the capacity for 20 air changes per hour. For example a typical 20ft container requires a 11m ³ /minute fan or better	
Leak checking The gas supply system and enclosure must be checked for leaks			Major	The supply system should be checked as the gas is being applied. Release small amount of gas into the system first, if no leak are found continue to apply the dose. The enlosure should be checked for leak after the dose has been applied. Pay particular attention to exit points, corners, joints or any repairs made.	
Start Point Concentration readings must be taken at the start of the fumigation.			Critical	All must be at or above standard The readings must be in equilibrium Compliance with this requirement depend on the action the fumigator takes if these two conditions are not met.	
End Point Concentration readings must be taken at the end of the exposure period			Critical	All readings must be at or above standard. Compliance with this requirement depend on the action the fumigator takes if this conditions are not met.	
TLV The concentration of methyl bromide at the end of ventilation must fall below 5ppm.			Major	Once the TLV has been initially met the doors of the container should be closed and the TLV rechecked to ensure fumigant is not still present in the container or the commodity. The actual TLV reading should be recorded not just it was below 5ppm. Electronic leak detectors can be useful as a preliminary check.	
Comments:					