



Methyl Bromide Fumigation Enclosure Gas Monitoring

As notified in the 6 September 2017 MPI Notice to Treatment Suppliers – Change to Monitoring during Fumigations, MPI is changing the monitoring method used within the enclosure when applying methyl bromide for official biosecurity treatments. The change to real time monitoring will be required from 1 September 2018, as agreed at the annual meeting with stakeholders (treatment providers, auditors and interested parties) August 2017.

Procedures will need to be updated to meet sections 4.1, 4.2, 4.3, 7 and 8 of the International Cargo Cooperative Biosecurity Arrangement Methyl Bromide Fumigation Methodology available at: <http://www.mpi.govt.nz/importing/border-clearance/transitional-and-containment-facilities/resources/>

The following guidance is also given:

1. In 4.2.2 the order of the gas sampling tubes can be reversed. The reason for positioning the sampling as recommended is to check that the fumigant is evenly distributed throughout the enclosure.
2. Positioning the tubes in a loaded container can present a problem especially for the two tubes away from the door. Fixing the tubes to rigid poles long enough to extend into the container can solve this problem, bamboo poles or plastic electrical conduit is commonly used for this purpose. If the configuration of the commodity in the enclosure makes placement of the sampling tubes at the recommended locations impractical, they can be re-positioned to more accessible locations provided the even distribution of fumigant throughout the enclosure can still be adequately determined. The tubes should be labelled according to their location within the enclosure.
3. Large covered enclosures (e.g. logs) will need a sample line at both ends and in the middle of the stack as high as can practically be put into the centre.
4. The internal diameter of the sampling tubes should be suitable for the inlet of the concentration measuring instrument used. The connection must be gas-tight so no fresh air is drawn in contaminating the sample. The usual range of internal diameter is from 2mm – 6mm.
5. The sampling tubes should be long enough to extend outside the risk area to allow readings to be taken without the need to wear respirators. However, for large stacks it may be easier to use a respirator and a portable monitor
6. The tubes should not absorb methyl bromide or be easily compressed or susceptible to kinking which may restrict air flow and adversely affect the accuracy of the readings.
7. The current fan requirement will stay the same.
8. The current thermometer requirement and placement will stay the same.
9. Temperature recording for both job sheet and certificate is the lowest temperature inside the enclosure. Also need to record the three produce temperatures.
10. Topping up is as per 8.3 unless otherwise specified in a particular treatment schedule.
11. If a gas leak is noted from under the container, it needs to be sealed off or covering the container would be required.
12. Note that the NZ EPA requirements for safety including risk area distances override the ICCBA requirements.

Further discussion and guidance will occur in the refresher training on 16 & 19 July (Auckland) and 18 July (Christchurch) 2018.

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Concentration measuring instruments guidance

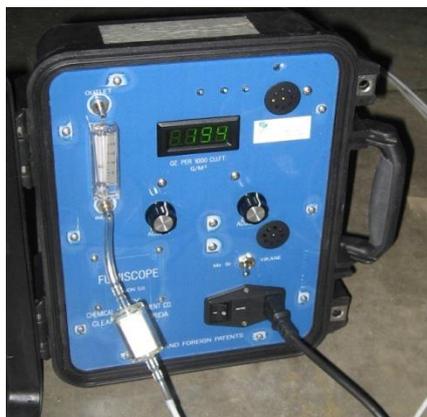
There are a number of suitable monitors that can be used. While price is always a significant factor in choosing any equipment careful consideration should also be given to the reliability and ease of use. Some of the brands on offer can be more difficult to use in the field than it would first appear. It would be prudent to carefully research what brand and model would represent the best choice to suit each fumigator's individual circumstances. When deciding on a fumigation monitoring instrument you should consider the following:

- Accuracy
- Detection range
- Durability
- Reliability
- Sensitivity to other factors such as CO₂ and moisture
- Cycle time between readings
- Ease of use
- Portability if required
- Calibration and maintenance requirements
- After sales service
- Purchase price and ongoing costs for maintenance and repair

The detection range should be between 2 – 200 g/m³ (1 g/m³ = 250 ppm)

Below are some instruments for monitoring methyl bromide fumigations.

Fumiscope version 5.0 and 5.1



range = 0 – 2999 g/m³

The operator's manual can be found at:

<http://www.fumiscope.com/pdf/51englishlanguagefumiscopemanual.pdf>

Riken FI-21



range = 0 – 200 g/m³

The operator's manual can be found at:

<http://www.rkiinstruments.com/pdf/mFI-21.pdf>

Uniphos 251PM-F

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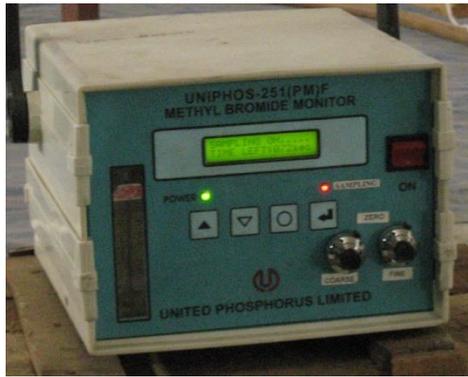
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range = 0 – 200 g/m³

<http://www.uniphos-she.com/fumigation equipments.php>

Spectros



<http://www.spectrosinstruments.com/products.html>

400 Series Fumigation Gas Monitor or MBContainIR Multizone
Range 0.2 to 270 g/m³ (50 to 70,000 ppm)

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TM3 Monitor for Methyl Bromide and Sulphuryl Fluoride

Bedfont TM3 monitor

Range 0-200mg/l

<https://www.bedfont.com/news/home/new.improvedfumigationmonitoring>

Filters

Some living commodities (e.g. garlic, onions, mangoes, logs) release high amounts of carbon dioxide and this affects gas measurements of some instruments. It is particularly important to maintain the carbon dioxide and moisture absorbers fitted to instruments.

It is not uncommon to see experienced fumigators using their equipment incorrectly so it is important for all fumigators to read and understand the user's manual for their instrument even if they are trained by a colleague.

Maintenance and calibration records must be kept for all monitors.

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