

# A Guide to Methyl Bromide Fumigation

## Frequently Asked Questions

The following information is developed to assist in answering frequently asked questions about the fumigation process used in Ports.



### Q. What is Methyl Bromide (MeBr)?

**A.** Methyl Bromide is a volatile liquid present as an odourless and colourless gas at room temperature. It is used as a fumigant/ insecticide to control and kill insects and rodents.

### Q. What is it used for?

**A.** The dominant use in New Zealand is in ports where it is used as an import quarantine and pre-export fumigant on containers, cars, raw logs, sawn timber, and many other products under import and export biosecurity agreements.

### Q. Why do we need to use it?

**A.** For import goods, such as used cars and machinery, MeBr fumigation can help prevent the establishment in New Zealand of exotic organisms that could damage our environment and economy. For the same reason, some of our trading partners require that logs and timber exported from New Zealand are fumigated before shipment.

### Q. Who can use MeBr?

**A.** Fumigation is only carried out by licensed applicators who work in ports and warehouses around the country. The applicators are assessed and issued with licence by the Environmental Risk Management Authority (ERMA)

### Q. How does the fumigation process work?

**A.** MeBr fumigant is supplied in liquid form in pressurised containers. It changes to a gaseous state when released from the bottles through a vaporiser.

For shipping containers, the gas is injected by means of a tube through rubber seals of the doors and vented after the required period by opening the doors.

For logs loaded in the hold of the ship MeBr is fed into the hold with the logs already loaded and the hold sealed. The fumigant is vented before loading continues on deck.

For deck cargo the logs are placed in large piles on the wharf, covered with secured tarpaulins and the MeBr introduced through a vaporiser. Again, the MeBr is vented to atmosphere after the required period.

The area is tested following venting to ensure that it is safe.

### Q. Is MeBr safe to work with?

**A.** As with any poisonous substance, MeBr must be handled with care. However, it has been in widespread use over a long period, and provided it is properly handled by qualified personal it is safe to use.

### Q. Is there a safe distance to be when venting?

**A.** The safe distance depends on circumstances, including the quantity of methyl bromide being used. ERMA has determined the following minimum buffer zones within which the public is not permitted until monitoring has determined it is safe.

| Location                            | Buffer Distance |
|-------------------------------------|-----------------|
| Ship's hold (over 1000kg MeBr)      | 100m            |
| Ship's hold (less than 1000kg MeBr) | 50m             |
| Fumigation under sheets             | 50m             |
| Containers (over 77cu m)            | 25m             |
| Containers (less than 77 cu m)      | 10m             |

### **Q. How is the use of MeBr monitored?**

**A.** In each case the applicator tests the area for MeBr leaks using approved gas meters. Where appropriate, written records are made of these tests.

ERMA requires monitoring to be undertaken at venting, down-wind at the edge of the buffer zone until readings are less than 0.05 ppm for at least 15 minutes. Monitoring data must be recorded along with other fumigation data for reporting purposes.

### **Q. Does MeBr leave a residue after use?**

**A.** The level of MeBr 'residues' depends on the type of fumigated material and how the venting is carried out. With good venting it quickly dissipates into the atmosphere.

### **Q. Why can't you capture the MeBr after use?**

**A.** Capture systems for shipping containers, using activated charcoal, have been developed but contaminated charcoal disposal remains an issue. However, the technology requires further development before it can be applied to larger fumigations, such as for log exports.

### **Q. What effects does MeBr have on people?**

**A.** Most symptoms of exposure to MeBr are common to other poisons. They may include headache, dizziness and vomiting. Severe over-exposure can cause death.

Those most likely to be exposed to MeBr are the applicators using it. Regular blood checks of the applicator personnel have shown no over-exposure.



### **Q. How can you reach a diagnosis of MeBr poisoning?**

**A.** There must be a clear history of exposure to MeBr vapour and/or liquid. If such exposure occurs in confined spaces then exposure will be greater than where good ventilation is present (all else being similar). Because most symptoms can arise from other causes, tests of blood bromide levels should be taken to support any diagnosis. However, bromide in the blood can come from other sources such as sea food.

### **Q. Why is MeBr being phased out?**

**A.** The motivation for the phase out is environmental considerations – like many halide based substances, MeBr damages the ozone layer.

### **Q. What alternatives are there?**

**A.** Having been used throughout the world for many decades, MeBr is by far the most widely accepted treatment for border biosecurity.

An important alternative developed in New Zealand has been the use of phosphine to treat in-hold cargoes of export logs during transit. This has greatly reduced New Zealand's reliance on MeBr. Phosphine has important environmental advantages, since it is not ozone-depleting. However, it is not at present suitable for deck cargo logs, and is not accepted by some of our trading partners.

Other potential fumigants such as methyl iodide and ethanedinitrile that are more environment friendly are currently under research and may one day be accepted as MeBr replacement.

Heat as a non-chemical treatment is also under investigation and is already widely used to treat small quantities of goods that are not sensitive to high temperature.

