



January 2021

To the Reassessments Team

Hazardous Substances Reassessments

Methyl Bromide Modelling Review Submission MPI

MPI is pleased to see the NZ guidelines (MfE, 2004) that recommend using the 99.9 percentile instead of 100th percentile for predicted maximum ground level concentrations have been applied. MPI is pleased to see the NZ guidelines (MfE, 2004) that recommend using the 99.9 percentile instead of 100th percentile for predicted maximum ground level Methyl bromide fumigant (gas) concentrations have now been applied.

It is a very rare event for Methyl bromide (MB) to be used at the 120g/m³ fumigation rate for logs to China in ship holds as Phosphine is normally used because it is cheaper, it can be done in-transit and preferentially avoids the use of MB. In 2020, 71% of treated logs for export were fumigated with Phosphine (MPI e-phyto database).

As stated for MPI's position in earlier submissions, any controls should be based on the volume of gas being released as this can be managed. Assuming the worst-case scenario, such as using the 120g/m³ application rate of MB for ship holds, this is unnecessary when it is normal practice to use a lesser dose of 72g/m³ for the Indian market in ship holds.

MPI believes that greater than 30% recapture of gas applied log stacks can be achieved with the use of current available equipment, but 90% recapture is quite unlikely without significant development of recapture equipment. Around 50 to 60% recapture of gas would be a realistic target as indicated in preliminary results from the MPI assessment of recapture on various cargoes that were tested. Some recapture of ship holds is also likely with further development, but it is unknown as to what extent is possible.

MPI is undertaking some monitoring samples of recapture work and the preliminary results depend on various factors, including:

- The size and type of enclosure (e.g. containers are easier and log stacks undercover are more difficult)
- the type of recapture technology applied (carbon higher efficiency than chemical)
- the amount of MB used and % remaining at the end
- the target commodity (inorganic commodities are easier than organic)
- environmental factors including within the enclosure (e.g. high moisture)
- the time period over which recapture occurs

MPI supports proposals for technically feasible recapture targets and phase in timelines. However, MPI has concerns over whether the current recapture technologies can achieve the targets over all commodities and fumigation applications. Insufficient validation of efficacy for current MB recapture technology to date.

Other methods such as active ventilation via a chimney can also improve plume behaviour of fumigant as noted in the reviews of the Todoroski (TAS) report, the height of the discharge above



sea level has an influence on the distance a plume will travel. The use of a chimney (height and dilution related to the volume discharged) is required in California and Maryland USA for discharge from space fumigations. It was also used successfully to dilute the discharge at Nelson port timber fumigations prior to recapture being required.

MPI understands that more real time air quality monitoring is occurring around the port and is interested to know if the results correlate with the modelling as there appeared to be a large discrepancy with the WorkSafe survey. There appears to be no real time monitoring evidence that confirms the worst-case scenario results of the modelling (the previous fumigation practice). The current buffer zone for ships is 100m with no recapture.

MPI agrees that the current Operator practice of staggered timing of the release of stacks and ship holds can be used as a method to reduce the possibility of the TEL requirement being exceeded at the boundary. This current practice of staggered release nullifies 10 of the 15 scenarios in the TAS report. The most likely scenario of 120g/m³ MB application rate undercover and 100% of stacks recaptured at 60% was not tested. Nor was a recapture rate of 30% for ship holds tested.

MPI would like to highlight to the DMC that the 1-hour TEL is set to protect vulnerable bystanders (of all ages) that could be exposed in the location over 24 hours. As can be seen from the aerial maps used in the TAS report, there are no vulnerable bystanders living within the red line designated in figure 4.2. The concerns expressed by people from the local marae can also be managed by the Port company not allowing the venting of ships from the tanker berth.

MPI agrees with the TAS conclusion that the risk to relevant bystanders can be managed via the five factors of:

1. Volume released per hour
2. Initial dose
3. Final concentration
4. Wind conditions
5. Distance to nearest receptors