

25 June 2021

Kia ora rā kōrua Decision Making Committee of the EPA,

Following Direction & Minute WGT037 of the Decision-making Committee (DMC), dated 10 June 2021, in relation to application APP203660 for the reassessment of methyl bromide (MB) we offer the following:

1.0 Self-reporting

The PDP 2021 Methyl bromide modelling study – Port of Tauranga: part 2 ('the report') is based to a large extent on information provided by the fumigator since, as described in the report, *'it was not possible for PDP....to verify these inputs'* (p.15).

While this is completely understandable for the purpose of the report, over reliance on information provided by an operator has its limitations (particularly involving such a hazardous gas in relatively close proximity to a public area). As described in our presentation to the DMC every one of the publicly available annual reports to the EPA for five years up to 2016 stated that no measureable methyl bromide was detected on the buffer zone (or boundary) at any time. We now know that this may have understated the reality of what was occurring at the time (these five reports are still available at <https://www.epa.govt.nz/resources-and-publications/methyl-bromide-annual-reports/>).

More recent annual reports are no longer being made publicly available despite the 2010 decision by Environmental Risk Management Authority (ERMA) stating that *'the monitoring methodology and results are (to) be made publicly available'*, in response to public concern (s.16.8.1 of ERMA methyl bromide reassessment decision 2010/2011). Since 2017 all methyl bromide annual reports must be submitted to WorkSafe.

2.0 Pre-release concentration

The report states that *'The quantity of methyl bromide gas released from each log stack or ship hold is estimated by Genera based on assumptions of headspace volume and measured pre-release concentration of methyl bromide....We consider that the pre-release concentration (of methyl bromide) would be relatively accurate as it is easily measured by the fumigator....'* (emphasis added). In contrast the headspace volume is described as *'likely a rough guide'*. (p.32)

It is the pre-release concentration of methyl bromide that must be set as one of the controls since it is also one of the few controls that can be relatively easily and independently measured by the regulator. This could be done in addition to controls relying on the information provided by the fumigator for the amount of fumigant introduced or the emission rate, or the recapture percentage.

3.0 Concentration of methyl bromide released to atmosphere (vented)

The report presents the measured methyl bromide concentration prior to venting for a number of fumigation events. The following table collates this data from a number of tables in the report and calculates the recapture percentage. It is significant that even with the relatively modest rates of recapture achieved (38% to 55%) the concentration of methyl bromide released to atmosphere at the completion of fumigation ranges from 14,733ppm to 21,483ppm with an average release concentration of 18,309ppm. This figure is more than 3000 times higher than the maximum concentration specified in the 2010/2011 ERMA reassessment of 5ppm which was to have applied from October 2020. The 30% recapture level sought by STIMBR equates to even higher vented concentrations.

<u>Table</u>	<u>Conc. Of MB vented (ppm)</u>	<u>MB kg Applied</u>	<u>MB kg Released</u>	<u>MB kg Post absorption Remaining</u>	<u>MB kg Recaptured</u>	<u>Recapture %</u>
A4.1	15,200	80	18	40	22	55%
A9.1 FP01	20,933	216	63	108	45	42%
A9.1 FP02	19,200	105	29	52.5	23.5	45%
A10.1	21,483	221	65	110.5	45.5	41%
A11.1	14,733	159	49	79.5	30.5	38%
Average	18309					44%

- (1) the table above is based on the widely adopted 50% absorption into logs;
- (2) the shaded area presents figures reproduced from the table listed in the first column while non-shaded figures are derived

Note the report incorrectly states that ‘...stack C17 (which) had a 69% recapture amount’ (p.166). The 69% figure includes the absorption into logs which, when assumed at 50%, results in an actual recapture value of approximately 38% (as per the lowest row of the above table).

4.0 Dispersion model under predicting reality

Despite the challenges in detecting and monitoring methyl bromide, the report states that ‘...the model does tend to under predict by between 10% and 20% compared to monitoring results.’ It goes on to say that, ‘A correction factor of say 25% could be applied to modelling results to ensure that the predicted concentrations more closely reflect reality.’(p.49). This is consistent with earlier statements from modellers i.e. The March 2021 EPA update report (s.3.13) states that the independent modelling programme commissioned by WorkSafe ‘consistently under predicted the concentrations.’ Also section 2.4.1 of Dr Jenny Barclay’s (ASG) review of the TAS modelling states that they ‘under predict the concentration ... between 8% ... and 26%...’

This under predication of reality by the models needs to be taken into account when setting buffer distances based on modelled predictions.

5.0 Ship hold ventilation

The reports states that *'where pre-ventilation concentration was not provided, we have assumed that 70% of the methyl bromide applied was recaptured or absorbed into the logs'* (p.32).

The table above suggests that this is a reasonable assumption for log fumigation. However the same assumption has been also made for the ship fumigation events of 21 August 2020 (table A3.1, p.72) and 3 December 2020 (table A7.1, p.118). No recapture is applied to ships therefore the same assumption cannot be made and it is very likely that greater quantities of methyl bromide were released than assumed. Unfortunately no pre-ventilation methyl concentrations were reported from these two ship fumigations.

6.0 Total volatile organic compounds (TVOC)

The report states that the higher than expected concentrations measured by the PIDs may be a result of other VOCs (e.g. terpenes) emitted from a log stack, rather than methyl bromide (p.27).

A recent independent's consultant's report (June 2021) provided to Regional Council examined the relationship between methyl bromide measurements from a highly accurate FTIR meter and PIDs (measuring TVOC).

For three of the five monitored events the difference in (average) reading between the FTIR and PID was within the margin of error; i.e. 0.08ppm compared to 0.07ppm, 0.13ppm compared to 0.11ppm, and 0.17ppm compared to 0.14ppm. For the other two ventilation events that were above the background VOC level, the average measured TVOC level was up to 28% less than the actual methyl bromide value (as determined by the FTIR).

These results suggest than non-methyl bromide VOCs are often not significant to the readings obtained from PIDs, particularly when methyl bromide concentrations are approaching the tolerable exposure limit (TEL).

Thank you for the opportunity to provide these comments. Don't hesitate to contact us if you require clarification or further information.

Ngā mihi nui.



Bay of Plenty Regional Council.