

**Before a Decision-Making Committee
Of the Environmental Protection Authority**

APP203660

Under the Hazardous Substances and New Organisms Act 1996

In the matter of the modified reassessment of methyl bromide

By **Stakeholders in Methyl Bromide Reduction Inc**
Applicant

31ST MEMORANDUM OF COUNSEL FOR THE APPLICANT

21 MAY 2021

Counsel Acting

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COMMENTS ON ADDITIONAL INFORMATION

Introduction

1. This memorandum provides STIMBR's comments on the EPA's Update Report and WorkSafe's monitoring results, in accordance with Direction & Minute WGT036.
2. STIMBR has also made contact with David Sullivan at SEC. Mr Sullivan is on annual leave. Due to this, and the existing work commitments of his colleagues at SEC, there cannot be any comments made by SEC on the EPA Update Report 2 within the time allowed.

Wind Speed condition

3. The Update Report states¹ it would be appropriate to set a minimum wind speed of 2m/s as a control.
4. STIMBR has previously supported the setting of such a control.²
5. The intent of such a control would be to preclude any emissions during those dispersion conditions which, according to TAS' modelling, give rise to the worst emissions.
6. If a low-wind speed control avoids the worst-case emissions, then the calculation of any buffer distances must allow for that: the calculation must exclude emissions occurring during that low wind speed.
7. However, the 99.9th percentile values used in the TAS modelling do not exclude low wind speed conditions. The TAS report states:³

The modelling will thus show the effect of such emissions during all weather conditions (in the modelled periods) including the periods with the least dispersing weather conditions (i.e. the worst-case weather conditions).

8. Therefore, the 99.9th percentile values in the TAS modelling cannot be used to set buffer distances if a 2m/s wind-speed condition is also imposed.

¹ At 7.3.

² 25th Memorandum of Counsel, 29 January 2021.

³ At p 17.

9. For these reasons, STIMBR only supports a 2m/s wind speed control if the TAS modelling is not relied on for the setting of buffer distances; and conversely if the TAS modelling is relied on for the setting of buffer distances, STIMBR does not support a 2m/s wind speed control.

Mass Emissions

10. Golder has previously proposed a mass emissions control as an alternative to setting buffer zones of an impracticable size.⁴
11. The EPA's Update Report records that a control of this sort would address issues raised at the hearing regarding flexibility.⁵ STIMBR agrees. By focussing on mass emissions rather than dictating specific parameters to achieve those emissions (such as dose rate or stack sizes), operators will be enabled to adjust practice into the future, but will always be accountable in relation to the one metric that counts from a public health perspective — the amount of methyl bromide that can be released without causing the 1-Hour TEL to be exceeded in publicly accessible locations.

Compliance and Monitoring

12. The EPA Update Report identifies a concern that compliance and monitoring agencies may find it difficult to assess compliance with a mass emissions control, and notes BOPRC's request for clear and enforceable controls.⁶
13. It is difficult to consider such matters in the abstract. STIMBR has therefore developed a set of draft controls which the DMC can evaluate for clarity and enforceability. These draft controls are set out in Appendix 1 to this memorandum.
14. STIMBR emphasises that the controls have been drafted in order to provide something tangible to assess against the concerns or issues raised in the EPA Update Report. There may be room for improvement in the controls, but STIMBR submits they are developed to a sufficient degree to demonstrate the workability of a mass emissions approach.

⁴ *Fumigation Mitigation Options Mitigation* 29 January 2021.

⁵ At 7.9.

⁶ At 7.11.

15. For all technical elements in the draft controls, STIMBR has relied on Golder's advice, attached as Appendix 2 to this memorandum.
16. For example, the draft log stack controls dictate a range of buffer distances depending on the maximum emission rate from a given log stack, and STIMBR has relied on Golder's advice on:
 - (a) how emission rates should be calculated, and
 - (b) what buffer distances are commensurate with different emission rates.STIMBR understands Golder has in turn relied on TAS's modelling to formulate this advice.
17. In practice, these controls would require the fumigator to undertake an emission rate calculation prior to every ventilation, and there must be a buffer zone in place that is proportionate to that rate.
18. Compliance with such controls can be readily assessed, by requiring fumigators to
 - (a) keep records of every ventilation (including a record of the emission rate calculation for each ventilation and the corresponding buffer distance applied) and
 - (b) make those records available on request by any compliance and monitoring agencies.
19. This will enable compliance and monitoring agencies to assess the fumigator's records against monitored emissions. STIMBR submits that this adequately addresses any concern about the ability of compliance and monitoring agencies to maintain appropriate oversight of compliance.
20. These matters are also addressed in the Golder advice.⁷

Degree of detail for Hazardous Substance Controls

21. The EPA Update Report expresses resistance to various forms of precision in the potential controls, including:

⁷ Commencing on page 5 , three paragraphs beneath the heading "3.6 Emission rates".

- (a) Ventilation being adjusted according to weather conditions;⁸
 - (b) Allowable emissions for log stacks varying according to time of day;⁹
 - (c) Incorporating risk-matrices of wind speeds for each relevant port.¹⁰
22. STIMBR acknowledges that whatever controls the DMC decides to apply, these may be supplemented by controls imposed at a regional level under the Resource Management Act 1991; and precision of the sorts described above is not uncommon for regional level air discharge consents. However, STIMBR does not agree that there is any limit on the precision of the controls that the DMC may set. The controls must be as precise as they need to be in order to properly address the relevant risks; and the DMC's obligations in this are not lessened by any subsequent assessments and/or controls that may be imposed at a more local level.
23. STIMBR makes these comments in light of the level of detail incorporated within the set of draft controls put forward in Appendix 1. In some respects it may be considered the draft controls contain levels of precision akin to some of the matters listed at 21(a)-(c) above. For example, in respect of ship holds, the draft controls impose maximum dose rates for each of the three relevant ports, and ventilation schedules that vary according to the dose concentration and the time of ventilation. However, for the reasons stated above, STIMBR does not consider there is any limit on the DMC imposing controls with this degree of precision.

Buffer distances

24. The draft controls in Appendix 1 incorporate buffer distance requirements which are based on the form that buffer controls take in regulation 14.38 of the Health and Safety at Work (Hazardous Substances) Regulations 2017. STIMBR considers this is the most appropriate form for any buffer distance controls to take.

⁸ At 4.10.

⁹ At 4.18.

¹⁰ At 7.5.

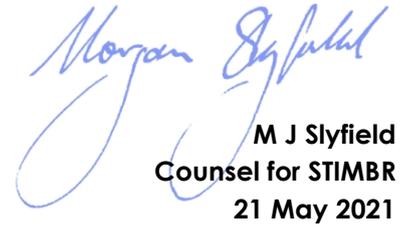
Adaptation

25. The draft controls for ship holds in Appendix 1 impose a lower maximum dose limit for the Port of Napier than for the Port of Tauranga and Northport. As explained in the Golder advice in Appendix 2, the reason for this is that the distance from relevant berths to publicly accessible areas in Napier is not great enough to provide the same high level of confidence of compliance with the 1-Hour TEL based on distances derived from the Tauranga modelling. Golder's recommendation is for Napier to be subject to a lower maximum dose limit until a site-specific modelling assessment can be undertaken that accounts for local meteorological conditions.
26. In STIMBR's view, this highlights that the controls need to incorporate a mechanism that enables the controls to be adapted over time, as scientific understanding evolves to support changes to maximum doses, dose rates, venting schedules or buffer distances.
27. STIMBR's draft controls in Appendix 1 incorporate a proposed clause to address this (draft clause 4 under "Ship hold fumigation"). It is based on adaptive management principles now commonly utilised in setting environmental controls under the Resource Management Act, and achieves all of the requisite standards for controls of this sort. It has a clear objective (continued compliance with the 1-Hour TEL), and it provides a process whereby peer-reviewed scientific assessment based on deterministic dispersion modelling is required in order for a change to be made. In STIMBR's view this is an appropriate control to ensure refinements to maximum dose, dose rates, ventilation schedules or buffer zones can be made without the need for a further full or modified reassessment under the HSNO Act. STIMBR submits it is within the DMC's jurisdiction to set controls of this sort given the breadth of discretion afforded under s 77A of the HSNO Act to impose such controls as the DMC thinks fit for purpose.

WorkSafe's Monitoring

28. WorkSafe's monitoring has been evaluated for STIMBR by Golder, and Golder's comments are included in Appendix 2 to this memorandum.
29. STIMBR notes that WorkSafe's monitoring measured peak results generally less than 50% of the predicted 99.9th percentile modelling results. This confirms the conservatism in the modelling, and supports the view that reliance on the

modelling provides a high level of confidence in the protectiveness of the controls.



M J Slyfield
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21 May 2021

31st Memorandum of Counsel for the Applicant, Appendix 1:

Draft Controls

Ship hold fumigation

1. A maximum dose of 120g/m³ can be applied to ship holds at Port of Tauranga and Northport.
2. A maximum dose of 72g/m³ can be applied to ship holds at Port of Napier.
3. Ship hold venting following fumigation shall comply with the following:
 - a. For a dose between 73 g/m³ and 120 g/m³:
 - i. the first hold shall be opened between 5 am and 11 am, each subsequent hold on that ship shall be opened at least 2 hours after the previous hold, and the last hold shall be opened no later than 9pm on the same day; or
 - ii. the first hold shall be opened between 8 am and 10 am, each subsequent hold on that ship shall be opened at least 1 hour after the previous hold, and the last hold shall be opened no later than 3pm on the same day.
 - b. For a dose between 41 g/m³ and 72 g/m³:
 - i. the first hold shall be opened between 2 am and 5 pm, each subsequent hold on that ship shall be opened at least 2 hours after the previous hold, and the last hold shall be opened no later than 3am on the following day; or
 - ii. the first hold shall be opened between 8 am and 10 am, each subsequent hold on that ship shall be opened at least 1 hour after the previous hold, and the last hold shall be opened no later than 3pm on the same day.
 - c. For a dose of 40 g/m³ or less holds may be opened at any time.
4. Any change to the maximum doses, dose rates and venting schedules set out above, or the buffer distances set out below, must be certified by the EPA before implementation. A request for certification shall be made to the EPA in writing, accompanied by a report prepared by a suitably qualified and experienced person that demonstrates, by deterministic dispersion modelling analysis, that the proposed change will continue to allow the 1-hour TEL to be met. On receipt of such a request, the EPA shall obtain a peer review of the request from a suitably qualified and experienced person. The EPA shall provide the documented peer review, including reasons for supporting or not supporting the request, to the party requesting certification. If the peer review supports the request, the EPA shall certify the change, and the change shall take effect. If the peer review does not support the request, the EPA shall not certify the change. Subsequent requests for change may be made, including any variation of the initial request to resolve any reasons given in the peer review for not supporting the initial request.
5. Ship hold venting and log stack venting shall not occur at the same time. There shall be a minimum of a 2-hour gap between completing ship hold venting and commencing log stack venting and vice versa. Ship hold venting is considered to be completed 2 hours after the last ship hold cover has been fully opened.

Log stack fumigation

6. Log stack ventilation shall only be undertaken between 7am and 7pm.
7. For Port of Tauranga
 - a. No log stack fumigation shall be undertaken within 100 m of the landward port boundary.
 - b. During ventilation, emission rates shall be less than those shown in Table 1 for the relevant distance to the landward port boundary.
8. For Napier Port and Northport
 - a. No log stack fumigation shall be undertaken within 150 m of the port boundary.
 - b. During ventilation emission rates shall be less than those shown in Table 2 for the relevant distance to the landward port boundary.
9. The hourly emission rate shall be determined by summing the emission rates of every log stack ventilation within a rolling 1 hour period.

10. The emission rate from each log stack ventilation shall be determined using the following equation:

$$\text{Emission rate (kg)} = (\text{Covered_Volume} - \text{Log_Volume}) \times \text{Headspace_Concentration}(\text{final}) / 1000$$

Where:

- i. **Covered_Volume:** is the covered log pile volume used to determine the methyl bromide dose (as recorded on the log pile test sheets) (measured in cubic meters (m³))
- ii. **Log_Volume** is the volume of logs being fumigated under the cover, this can be conservatively estimated by JAS volume. (as recorded on the log pile test sheets) (measured in cubic meters (m³))
- iii. **Headspace_Concentration(final):** The methyl bromide concentration measured prior to the cover being removed (g/m³)
- iv. **Unit correction factor of 1000 to convert from g to kg.**

Records

11. Fumigators shall keep records of every ventilation (including a record of the emission rate calculation for each ventilation and the corresponding buffer distance applied) and make those records available on request by any compliance and monitoring agencies.

Buffer Zones

12. For each ship hold fumigation the fumigator must:
- a. set a buffer zone that is equal to or more than the relevant distance in Table 3; and
 - b. ensure that no member of the public is in the buffer zone from the time the fumigation begins until at least 2 hours after the last ship hold cover has been fully opened.
13. For each log stack fumigation the fumigator must:
- a. set a buffer zone that is equal to or more than the relevant distance in Table 1 or 2; and
 - b. ensure that no member of the public is in the buffer zone from the time when the seal securing the log stack cover is broken until at least 15 minutes after the log stack cover has been fully removed.
14. Despite 11b and 12b above, if a buffer zone extends over water, the fumigator must ensure so far as reasonably practicable that—
- a. The buffer zone is kept under observation; and
 - b. If a member of the public enters the buffer zone, the member of the public moves out of the buffer zone as soon as is reasonably practicable.

Table 1: Port of Tauranga maximum methyl bromide emission rate (kg/hr) by hour of day and buffer zone.

		Required buffer zone						
		150 m	180 m	210 m	240 m	270 m	300 m	330 m
Time of day	Between 7 am -9 am or 3 pm -7 pm	48	52	60	69	79	90	102
	Between 9 am to 3 pm	75	107	136	159	186	221	242

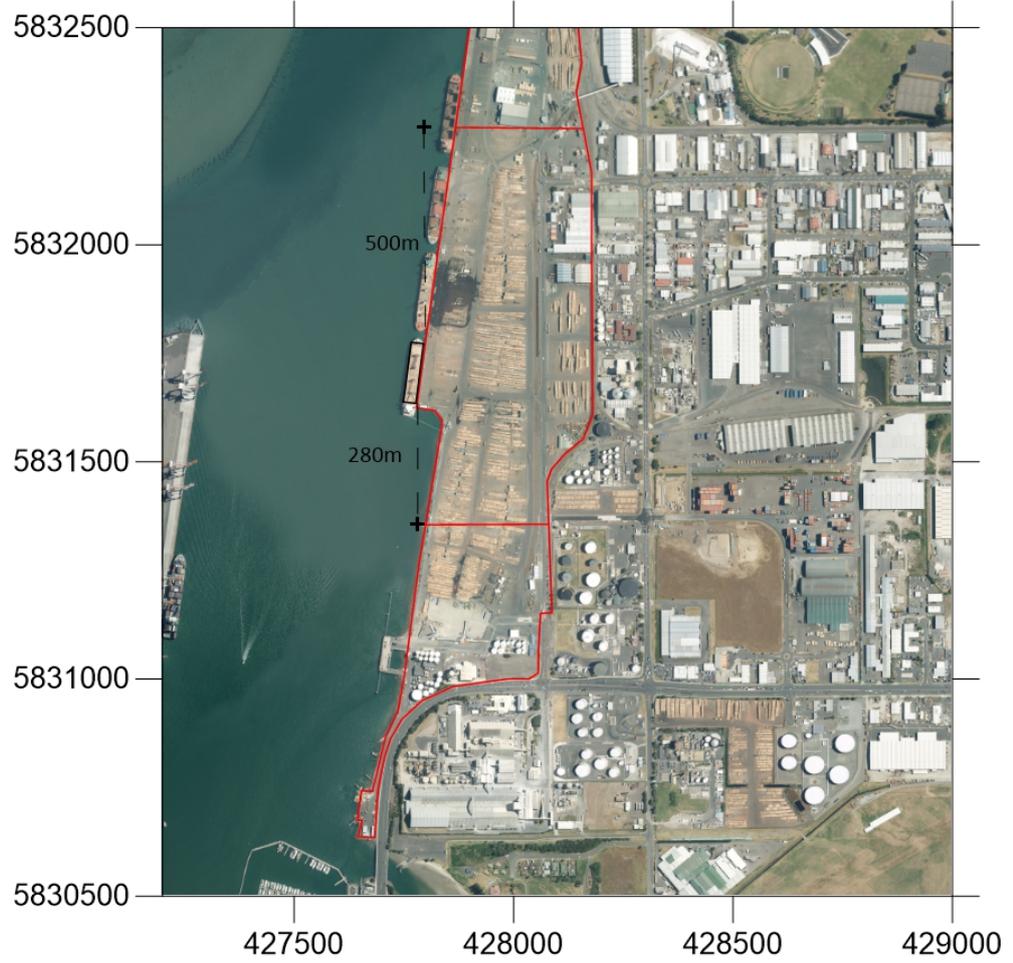
Table 2: Napier Port and Northport maximum methyl bromide emission rate (kg/hr) by hour of day and buffer zone.

		Required buffer zone						
		150 m	180 m	210 m	240 m	270 m	300 m	330 m
Time of day	Between 7 am -9 am or 3 pm -7 pm	48	52	60	69	79	90	102
	Between 9 am to 3 pm	75	107	136	159	186	221	242

Table 3: Ship hold ventilation buffer zones.

		Location	
		Over land	Over water
Port	Napier	610 m	
	Northport	700 m	
	Tauranga (40g/m ³ dose)	310 m	
	Tauranga (>40g/m ³ dose)	The buffer zone shall be coincident with the eastern and western port boundaries with northern and southern boundaries as follows:* The southern boundary shall be 280m south of the ship and on an east west bearing until it intercepts with the eastern port boundary. The northern boundary shall be 500m north of the ship and on an east west bearing until it intercepts with the eastern port boundary	610 m

Note: *A diagram is provided below for clarity.



31st Memorandum of Counsel for the Applicant, Appendix 2:

Golder Report