

**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

OPENING LEGAL SUBMISSIONS OF COUNSEL FOR THE APPLICANT

11 August 2020

Counsel Acting

M J Slyfield
Stout Street Chambers

(04) 915 9277
morgan.slyfield@stoutstreet.co.nz
PO Box 117, Wellington

INTRODUCTION

1. Methyl bromide is approved under the Hazardous Substances and New Organisms Act 1996 (**HSNO Act**), subject to a recapture control that cannot be met. The control requires recapture to a level that is beyond all known or foreseeable technology.
2. If the recapture control takes effect in its present form it will, in practice, prohibit the use of methyl bromide in New Zealand. Over the subsequent decade, New Zealand will lose \$2.2 - \$3.2 billion due to the impact on export and import activity, and it is likely the loss will lie at the higher end of this range.
3. STIMBR is seeking to avoid these impacts through its application for reassessment of the recapture control.
4. Some people believe the recapture control was always intended to prohibit the use of the methyl bromide. But ERMA,¹ who imposed the control, was well aware of the benefits New Zealand obtains from the use of methyl bromide. It set a standard of recapture that it believed would allow continued use of methyl bromide and retention of the benefits from such use.² With hindsight we can now say ERMA was wrong. It set a standard of recapture³ that cannot be achieved by any known or foreseeable technology.
5. STIMBR does not oppose recapture technology. Indeed, STIMBR's goal is to reduce the release of methyl bromide into the atmosphere and seek long-term reduction in its use.⁴ In pursuit of this goal, STIMBR has invested more than \$30 million over the past decade on research and development of recapture technology and alternatives to methyl bromide that might enable emissions to be reduced. This includes actively supporting an application under the HSNO Act for approval of an alternative fumigant, ethanedinitrile (**EDN**). EDN is effective against pest species, it is not an ozone-depleting substance, and it rapidly breaks down during fumigation. It has the potential to substitute methyl bromide in all log fumigations. Unfortunately, a decision on EDN has not yet been made, though the application was lodged more than 3 years ago.

¹ The Environmental Risk Management Authority, predecessor of the Environmental Protection Authority in relation to hazardous substances management.

² Decision HRC08002, 28 October 2010 as amended on 17 June 2011, at 16.11.8.

³ To reduce the methyl bromide remaining inside a fumigation enclosure to 5ppm 8-Hour Time-Weighted Average before ventilation.

⁴ Constitution of Stakeholders in Methyl Bromide Reduction Incorporated, clause 2.1.

6. Until EDN is approved with feasible controls, STIMBR's only remaining option is to seek a reassessment of the methyl bromide recapture control, so that the control can be set at a level that is achievable with existing or foreseeable technology. The central question for this application is whether there is a recapture control:
- (a) that is achievable,
 - (b) that will not compromise the health and safety of people and communities, and
 - (c) that will uphold New Zealand's international obligations.

STIMBR submits that there is.

7. In accordance with the Hearing Procedures,⁵ these submissions provide:
- (a) a succinct overview of STIMBR's application,
 - (b) a summary of the legal context,
 - (c) identification of the relevant issues and STIMBR's position on those issues, and
 - (d) some conclusions.

With one exception,⁶ the submissions do not reply or respond to any of the information that the DMC has received from the EPA or submitters on 27 July 2020 or later; which will be covered in STIMBR's reply at the conclusion of this hearing.⁷

THE APPLICATION

8. STIMBR's application sought a modified reassessment to provide clarity regarding the current controls,⁸ to reassess the feasibility of recapture technology, and to refine the controls to:⁹

⁵ Hearing Procedures as at 10 August 2020 at [28].

⁶ Below at [46].

⁷ In accordance with Direction & Minute WGT019 of the DMC, 4 August 2020; 19th Memorandum of Counsel for the Applicant, 5 August 2020; Direction & Minute WGT020 of the DMC, 6 August 2020.

⁸ When the application was lodged, these controls were in ERMA's 2010 reassessment decision HRC08002. On 19 July 2019 the EPA reissued the approval under clause 4 of Schedule 7 of the HSNO Act, and on 19 November 2019 the EPA amended the reissued approval under s 67A. The reassessment is therefore a reassessment of the 19 November 2019 version of the approval – which replicates the recapture control as per ERMA's 2010 decision.

⁹ Application for Reassessment at 2.1.

- (a) require recapture of 80% of methyl bromide remaining at the end of fumigations;
 - (b) extend by 10 years the deadline for achieving recapture from ship hold fumigations; and
 - (c) make related refinements to strengthen buffer zone requirements at the completion of recapture.
9. The EPA decided to process the application as a modified reassessment under s 63A of the HSNO Act, with specific aspects to be reassessed, being:¹⁰
- (a) hazard classification,
 - (b) benefits, and
 - (c) controls on the use of methyl bromide (within the scope of the Act and excluding those within the Health and Safety at Work regime).
10. STIMBR is no longer seeking the same outcomes as set out in the application documents. The following sections provide an up to date description of STIMBR's current position.

Shipping containers

11. In relation to QPS fumigations in shipping containers, STIMBR continues to seek a recapture standard of 80%.¹¹ In doing so, STIMBR relies on advice from Genera that 80% is an achievable standard for shipping container fumigations.
12. The recapture obligation is due to take effect on 28 April 2021.¹² STIMBR supports this deadline for shipping containers, based on advice from Genera that the deadline is achievable if the recapture standard is 80%. STIMBR understands from Genera that if any higher standard of recapture were required, then:
- (a) It may not be achievable in practice for all shipping container fumigations; and

¹⁰ Pathway Determination for Reassessment of Methyl Bromide, 12 April 2019, at 7.

¹¹ 80% recapture refers to the percentage of methyl bromide to be recaptured from the methyl bromide remaining in the airspace at the end of the fumigation cycle, prior to ventilation of the relevant enclosure.

¹² Direction & Minute WGT015 of the DMC, 1 July 2020 at [46].

- (b) Even if it could be theoretically achieved, it is likely more time would be required before it could be achieved in practice, so additional lead time would be required in that instance.

Log stacks

13. After filing its application, STIMBR learned that 80% recapture is only achievable from time to time in operational conditions. In operational conditions, the achievable percentage of recapture is greatly affected by a number of variables,¹³ including but not limited to the moisture content of the logs in the stack, the size of the stack, and the ambient air temperature and the composition of the enclosed atmosphere. Relying on Genera's advice, STIMBR understands 80% reduction is at the highest end of what is achievable, and 30% reduction is at the lowest end.
14. This variability was known to the air dispersion modellers and taken into account during their expert conferencing, which is why they agreed to model dispersion based on varied rates of recapture from 30% to 80%.¹⁴
15. In light of this updated information STIMBR no longer seeks an 80% recapture standard for log stacks. Such a standard would defeat a fundamental purpose of this reassessment, i.e. replacing the current, unachievable recapture standard with a new, achievable standard. Therefore, STIMBR is seeking a standard of 30% recapture for log stacks.
16. The equipment to achieve recapture from all log stacks will take some time to manufacture.¹⁵ No prudent commercial decision to make the necessary and significant capital investment can be made until there is clarity that a workable recapture standard has been set.¹⁶
17. Allowing for the lead time to manufacture and install all of the necessary equipment, STIMBR requests that any new recapture obligation should apply to log stacks 24 months after the DMC's decision. STIMBR considers it would be feasible for the obligation to be stepped to reflect that plant will become progressively available; e.g. recapture from 25% of all log stacks within 6

¹³ Statement of Evidence of Jack Armstrong 27 July 2020 at [42] and [46]; Statement of Evidence of Matt Hill in Support of Submissions by Genera Science and Innovation and Genera Group Ltd, 27 July 2020 at [74] and [77].

¹⁴ Joint Statement of Experts in the Field of Air Dispersion Modelling, 19 March 2020 at [13] and [14].

¹⁵ Direction & Minute WGT003 of the DMC, 20 December 2019 at [9]; STIMBR Response to Further Information Request in WGT003, 5 February 2020; Statement of Evidence of Matt Hill in Support of Submissions by Genera Science and Innovation and Genera Group Ltd at [80]-[99].

¹⁶ Statement of Evidence of Matt Hill in Support of Submissions by Genera Science and Innovation and Genera Group Ltd at [99].

months of the decision, 50% of all log stacks within 12 months of the decision, 75% of all log stacks within 18 months of the decision and 100% of log stacks within 24 months of the decision.

Ship holds

18. The feasibility of recapture from ship holds has not changed since the application was lodged: there is no known or foreseeable technology capable of achieving meaningful recapture from ship holds.¹⁷ This is the reason for STIMBR's request for a time extension to delay the recapture obligation from applying to ship holds.
19. Any recapture obligation applying at the end of such an extension period would be "aspirational" given the current state of science and technology.¹⁸ However, STIMBR considers a recapture standard should apply at the end of the extension period, to incentivise further progress, and to provide greater certainty for the future. STIMBR considers a 50% recapture standard may be appropriate.

Buffer zones

20. STIMBR is no longer seeking any change to buffer zone controls.
21. Buffer zone controls were set in ERMA's 2010 decision, but that decision was replaced in June 2019 by the Reissued Approval.¹⁹ The Reissued Approval contains no buffer zone controls, which is consistent with the transfer of responsibilities from the EPA to WorkSafe in 2017. Buffer zones are now regulated under the Health and Safety at Work (Hazardous Substances) Regulations 2017 (**HSW(HS) Regulations**),²⁰ which are outside the jurisdiction of this reassessment.
22. The HSW(HS) Regulations require every fumigator to manage fumigations to ensure the concentration of methyl bromide does not exceed the tolerable exposure limit (**TEL**) at the boundary of the buffer zone.²¹ For these purposes the buffer zones are the same as those set by ERMA in 2010: 100m from ship holds fumigated with larger volumes, 50m from log stacks and 10 or 25m from

¹⁷ Statement of Evidence of Jack Armstrong 27 July 2020 at [49]; Statement of Evidence of Matt Hill in Support of Submissions by Genera Science and Innovation and Genera Group Ltd, 27 July 2020 at [76].

¹⁸ Statement of Evidence of Jack Armstrong 27 July 2020 at [49].

¹⁹ Reissued Approval HSR001635. See above n 8.

²⁰ HSW(HS) Regulations, regs 14.38 and 14.39.

²¹ Regulation 14.39. NB. The TEL is still set by the EPA under the Reissued Approval.

shipping containers.²² These controls do not vary according to whether recapture is or is not applied.

23. In these circumstances STIMBR no longer seeks any change to the buffer zone controls. The Reissued Approval clarifies that management of buffer zones now sits exclusively within the HSW(HS) Regulations, and the fundamental requirement to comply with the TEL at the boundary of the buffer zone applies whether or not recapture is used. STIMBR submits these measures are appropriate to manage the risks to the public from potential exposure to methyl bromide emissions during ventilation.

LEGAL FRAMEWORK

24. The legal framework for your assessment is set out in the HSNO Act and the Hazardous Substances and New Organisms (Methodology) Order 1998 (**the Methodology Order**).
25. Section 63A provides specific guidance for modified reassessments:
- (a) You cannot revoke the approval given to methyl bromide,²³ but may vary the EPA controls that attach to it.²⁴
 - (b) In deciding whether to approve or decline the application you must take into account all the effects associated with the reassessment.²⁵ This includes both positive and negative effects.
 - (c) You are also required to take into account the best international practices and standards for the safe management of hazardous substances.²⁶
26. The provisions of ss 77, 77A and 77B, which relate to the setting of controls and exposure limits, also apply to modified reassessments.²⁷ Section 77A(4) is of particular relevance, as it directs you to consider particular matters when setting a new control, as STIMBR is seeking here. The relevant part states:

Before imposing a control under this section, the Authority must be satisfied that...

(a) against any other specified controls that apply to the substance,—

(i) the proposed control is more effective in terms of its effect on the management, use, and risks of the substance; or

²² Regulation 14.32.

²³ HSNO Act, section 63A(2)(b).

²⁴ HSNO Act, section 63A(2)(a).

²⁵ HSNO Act, section 63A(6)(a).

²⁶ HSNO Act, section 63A(6).

²⁷ HSNO Act, section 63A(7).

- (ii) the proposed control is more cost-effective in terms of its effect on the management, use, and risks of the substance; or
- (iii) the proposed control is more likely to achieve its purpose.

27. Your decision must ultimately be consistent with the purpose of the HSNO Act: to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms.²⁸ Towards that purpose, you are required to recognise and provide for two principles, being:

- (a) The safeguarding of the life-supporting capacity of air, water, soil, and eco systems;²⁹ and
- (b) The maintenance and enhancement of the capacity of people and communities to provide for their own economic, social, and cultural wellbeing and for the reasonably foreseeable needs of future generations.³⁰

28. Of the other matters that you are directed to take into account under Part 2 of the Act, those relevant to this application are:

- (a) Public health;³¹
- (b) The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, valued flora and fauna, and other taonga;³²
- (c) The economic and related benefit and costs of using a particular hazardous substance;³³
- (d) New Zealand's international obligations;³⁴
- (e) The need for caution in managing adverse effects where there is scientific and technical uncertainty about those effects;³⁵ and
- (f) The principles of Te Tiriti o Waitangi.³⁶

²⁸ HSNO Act, section 4.

²⁹ HSNO Act, section 5(a).

³⁰ HSNO Act, section 5(b).

³¹ HSNO Act, section 6(c).

³² HSNO Act, section 6(d).

³³ HSNO Act, section 6(e).

³⁴ HSNO Act, section 6(f).

³⁵ HSNO Act, section 7.

³⁶ HSNO Act, section 8.

29. Your duty to “take into account” these matters contrasts with your duty to “recognise and provide for” the principles in s 5. As the High Court stated in *Bleakley v Environmental Risk Management Authority*:³⁷

On occasions the phrase [“take into account”] has been held to require some actual provision to be made for the factor concerned, but all depends upon context. In this case context is clear and decisive. Here is a deliberate legislative contrast between s 5 “recognise and provide for” and s 6 “take into account”. When Parliament intended that actual provision be made for a factor, Parliament said so. One does not “provide for” a factor by considering and then discarding it. In that light, the obligation “to take into account” in s 6 was not intended to be higher than an obligation to consider the factor concerned in the course of making a decision—to weigh it up along with other factors—with the ability to give it, considerable, moderate, little, or no weight at all as in the end in all the circumstances seemed appropriate.

30. The Methodology Order also provides specific guidance on:

- (a) The evaluation of risks, costs and benefits:

12. When evaluating assessment of risks associated with the substance ... in an application, the Authority must take into account –

- (a) The nature of the adverse effects; and
- (b) The probability of occurrence and the magnitude of each adverse effect; and
- (c) The risk assessed as a combination of the magnitude of the adverse effect and the probability of its occurrence; and
- (d) The options and proposals for managing the risks identified; and
- (e) The uncertainty bounds on the information contained in the assessment expressed quantitatively where possible, but otherwise through narrative statements.

13. When evaluating the assessments of costs and benefits associated with the substance ... in an application, the Authority must take into account –

- (a) The costs and benefits associated with the application and whether the costs and benefits are monetary or non-monetary; and
- (b) The magnitude or expected value of the costs and benefits and the uncertainty bounds on the expected value; and
- (c) The distributional effects of the costs and benefits over time, space, and groups in the community.

- (b) Considering scientific information and submissions:³⁸

When considering submissions addressing scientific evidence or uncertainty, the Authority must take account of the scientific basis or authority for the information contained in the submission.

³⁷ *Bleakley v Environmental Risk Management Authority* [2001] 3 NZLR 213 at [72].

³⁸ Clause 16.

(c) Decision-making:

25(1). When evaluating risks, the Authority must begin with a consideration of the scientific evidence relating to the application and to take into account the degree of uncertainty attaching to that evidence.

26. Taking into account the measures available (if any) for risk management, the Authority may approve an application where a substance ... poses negligible risks to the environment and human health and safety if it is evident that the benefits associated with that substance ... outweigh the costs.

27(1). Where clause 26 does not apply, the Authority must take into account the extent to which the risks and any costs associated with that substance ... may be outweighed by benefits.

(d) Uncertainty:

29. Where the Authority encounters scientific and technical uncertainty relating to the potential adverse effects of a substance or organism, or where there is disputed scientific or technical information, the Authority—
(a) must determine the materiality and significance to the application of the uncertainty or dispute taking into account the extent of agreement on the scope and meaning of the scientific evidence; and
(b) may, where the uncertainty or dispute is material or significant, facilitate discussion between the parties concerned to clarify the uncertainty or dispute.

30. Where any scientific or technical uncertainty or dispute is not resolved to the Authority's satisfaction during its consideration of the application, the Authority must take into account the need for caution in managing the adverse effects of the substance or (to the extent provided for under the Act) the organism concerned.

31. Where the Authority considers that uncertainty arises from an absence of information, or inconclusive or contradictory information, or information from an unreliable source, the Authority may request the applicant to provide further information in accordance with section 58 of the Act and must take full account of any additional information provided.

32. Where the Authority considers there is uncertainty in relation to costs, benefits, and risks (including, where applicable, the scope for managing those risks), the Authority must attempt to establish the range of uncertainty and must take into account the probability of the costs, benefits, and risks being either more or less than the levels given in evidence.

31. Finally, if you are contemplating any controls under section 77, the Methodology Order directs you to:³⁹

(a) Consider the costs and benefits of making the controls more or less stringent (including the likely effectiveness of the implementation of

³⁹ Methodology Order, clause 35.

possible controls); and

- (b) Invite the applicant to comment on the cost-effective application of controls to achieve a specified level of risk management.

KEY ISSUES

- 32. ERMA gave four reasons in 2010 for imposing the recapture obligation. It considered the recapture obligation would:⁴⁰
 - (a) Be consistent with the Montreal Protocol;
 - (b) Reduce the risk of direct effects on human health;
 - (c) Reduce the risk of indirect effects due to ozone depletion; and
 - (d) Enable QPS uses of methyl bromide to continue, and all the benefits of those uses to be realised.
- 33. These four reasons provide a useful framework for covering most of the subject matter you are required to take into account under Part 2 of the HSNO Act. The only subject they do not cover, and which is addressed in the following section are the Māori cultural considerations raised in ss 6(d) and 8 of the HSNO Act.

Montreal Protocol

- 34. STIMBR agrees with ERMA's 2010 assessment that imposing a recapture obligation is consistent with the Montreal Protocol. However, it would be equally consistent with the Montreal Protocol to *not* impose a recapture obligation; as the Protocol does not contain any strict requirement that New Zealand must, in its domestic legislation or regulation, require recapture.
- 35. This is no criticism of the Protocol. It is often considered one of the most successful environmental treaties ever negotiated. Yet the same parties who united under the Protocol to phase out the use of methyl bromide and other ozone depleting substances, also agreed that this requirement would not apply to QPS uses.
- 36. In respect of those uses, the Protocol, and decisions of the parties under the Protocol, require less. The most relevant guidance is contained in Decision XI/13 which:

⁴⁰ See 16.11.1, 16.11.7 — 16.11.9.

Encourages the use of methyl bromide recovery and recycling techniques (where technologically and economically feasible) to reduce emissions of methyl bromide, until alternatives to methyl bromide for quarantine and pre-shipment uses are available.

37. Where possible, New Zealand has already transitioned to alternatives to methyl bromide for QPS uses. An example is the use of phosphine for fumigating logs in ship holds bound for China. A further alternative, EDN, is on the horizon. When it is approved by the EPA with workable controls, and approved by New Zealand's trading partners, STIMBR expects it will replace all methyl bromide used in fumigations of forest products. But EDN is not available yet. Until it becomes available, or some other unknown alternative is discovered, Decision XI/13 encourages recovery and recycling where that is technologically and economically feasible.
38. STIMBR's evidence is that for the past decade (and indeed prior) STIMBR, in the spirit of the Montreal Protocol, has been engaged at the forefront of a comprehensive effort to find technologically and economically feasible ways to recapture methyl bromide. The only conclusion this effort supports, at this time, is that recapture is not technologically feasible to the standard set by ERMA in 2010.
39. In all these circumstances, New Zealand will be upholding in full the commitments it has made under the Protocol if the recapture obligation is amended in the manner sought by STIMBR.

Direct human health effects

Direct human health effects are negligible with or without the recapture control

40. In 2010 ERMA examined the direct risks to human health posed by methyl bromide emissions and decided to set tolerable exposure levels,⁴¹ a workplace exposure standard (**WES**)⁴² and buffer zone controls,⁴³ as well as monitoring,⁴⁴ reporting⁴⁵ and notification⁴⁶ controls. These added to other controls covering approved handlers, licensing, and personal protective equipment.

⁴¹ Decision HRC08002 at 16.5.1 to 16.4.11.

⁴² In relation to workplace exposure, ERMA adopted the standard set by the then Department of Labour, and considered any modified WES value set by the Department should be adopted as a HSNO WES. See Decision HRC08002 at 16.5.12.

⁴³ Decision HRC08002 at 16.6.1 to 16.6.20.

⁴⁴ Decision HRC08002 at 16.7.1 to 16.7.19.

⁴⁵ Decision HRC08002 at 16.8.1 to 16.8.5.

⁴⁶ Decision HRC08002 at 16.9.1 to 16.9.4.

41. Taking all these measures into account, ERMA concluded that every conceivable risk to human health would be negligible. It specifically decided that the level of risk:

- (a) to fumigation staff;⁴⁷
- (b) to occupational by-standers working in the vicinity;⁴⁸ and
- (c) to the public;⁴⁹

would be negligible, *without* any recapture being applied.

42. Although ERMA considered the recapture control would minimise the risks to human health, that must be seen in the context of ERMA having already determined that those risks would be negligible, whether or not recapture occurs.

43. Since then, there has been:

- (a) no material change to the toxicity assessment of methyl bromide;
- (b) no evidence that any effect on human health has arisen as a result of methyl bromide emissions, despite a significant increase in the volume of fumigation activity over that period; and
- (c) no credible evidence to link methyl bromide emissions with any new health risk.

All the controls ERMA relied on to conclude the risks are negligible are still in place, under the Reissued Approval, the HSW(HS) Regulations or elsewhere.

44. For these reasons, STIMBR submits there is no reason for you to reach any different conclusion than ERMA as to the level of risks to human health.

Air dispersion modelling predicts no human health effects of concern

45. In support of this, STIMBR has obtained air dispersion modelling from Sullivan Environmental Consulting (**SEC**). SEC has applied a methodology agreed with other air dispersion modelling experts,⁵⁰ and has reported the results of the

⁴⁷ Decison HRC08002 at 12.4.14.

⁴⁸ Decison HRC08002 at 12.4.17.

⁴⁹ Decison HRC08002 at 12.4.26.

⁵⁰ As recorded in Joint Statement of Experts in the Field of Air Dispersion Modelling, 30 January 2020 and Joint Statement of Experts in the Field of Air Dispersion Modelling, 19 March 2020.

modelling.⁵¹ This is the only modelling that has been conducted on a consensus basis. Mr Sullivan's evidence will be that the modelling incorporates many elements of conservatism (i.e. it overstates the potential exposures to methyl bromide)⁵² and is reasonably consistent with measured data.⁵³

46. Mr Sullivan's response to the evidence to be presented by the EPA and other submitters will be provided in the course of STIMBR's reply, as required by the DMC. There is one exception to this: Mr Sullivan will acknowledge that an error was made in SEC's 25 June 2020 report,⁵⁴ and he will describe that error and provide his views on its significance. His evidence will be:
- (a) that the two tables attached to these submissions show the only corrections required to the data in SEC's report affected by the error; and
 - (b) that the error does not alter the reliability of the modelling results, or any of the conclusions he has reached.
47. STIMBR will continue to rely on the SEC modelling.
48. As good as the modelling is, it can only ever be a representation of reality. It is well known that at the extreme tail of modelled distributions model artifacts occur, i.e. unusual events that may or may not occur in the atmosphere.⁵⁵ STIMBR relies on Mr Sullivan's evidence of best international practice, which is to use a probabilistic approach based on the 98th or 99th percentiles. The Institute of Environmental Science and Research Limited (**ESR**), a Crown Research Institute, concurs with this approach,⁵⁶ as did the air quality experts in the 2019 EDN approval hearing.⁵⁷
49. Mr Sullivan's approach is independently supported by Dr Fletcher's evidence. Dr Fletcher will say that the highest percentile concentrations from the modelling will be prone to a high degree of estimation error, that 100th

⁵¹ Modelling Report for Methyl Bromide Exposures for Timber Fumigation at the Port of Tauranga, New Zealand, 25 June 2020.

⁵² Statement of Evidence of David Sullivan, 27 July 2020 at [32], [33], [77].

⁵³ Statement of Evidence of David Sullivan, 27 July 2020 at [21] and [60] to [94].

⁵⁴ An error was identified in the review of the modelling undertaken for the EPA by Todoroski Air Sciences.

⁵⁵ Statement of Evidence of David Sullivan, 27 July 2020 at [35].

⁵⁶ Assessment of Fumigants Used in the Treatment of Timber, October 2019 (ESR); Assessment of Fumigants Used in the Treatment of Timber – Addendum, July 2020 (ESR) ("ESR Reports").

⁵⁷ Expert Conferencing Joint Witness Statement on Air Concentration Dispersion Modelling, 15 October 2019: <https://www.epa.govt.nz/assets/FileAPI/hsno-ar/APP202804/8bff6b821f/APP202804-Joint-Expert-Statement-Air-Concentration-Dispersion-Modelling.pdf>

percentiles are so poorly estimated that they are almost worthless, and that even the 99.9th percentile recommended by NIWA has more than three times the average error of the 98th percentile.⁵⁸

50. Relying on Mr Sullivan's evidence, as supported by Dr Fletcher, ESR, and other sources of international best practice, STIMBR submits that with or without recapture, the standards for protecting human health —the WES and the TELs — are being met, or are capable of being met with minor adjustments to operational practices.⁵⁹ Therefore, there is no reason to assess the recapture standard in terms of impacts on human health.
51. To dispel any remaining doubt, STIMBR has requested a regulatory toxicologist, Dr Pemberton, to review the results of Mr Sullivan's modelling, and advise on the health impacts of methyl bromide emissions as modelled. Dr Pemberton's evidence is that even at the 99.99th percentiles the modelled exposures are all well below levels likely to cause any adverse health effect.⁶⁰ This, too, is consistent with ESR's independent analysis.⁶¹

Indirect effects due to ozone depletion

52. The third reason given by ERMA in 2010 for imposing a recapture obligation, is that it would reduce the risk of indirect effects on human health and the environment due to the ozone depleting properties of methyl bromide.⁶²
53. Indisputably, methyl bromide is an ozone-depleting substance; and any decrease in emissions therefore reduces the risk of indirect effects on human health and the environment. However, these effects are so indirect as to be unquantifiable in any meaningful way.
54. Further, your consideration of this aspect should take into account the Ozone Layer Protection Act 1996, the purpose of which is to give effect to New Zealand's international obligations, and to "help protect human health and the environment from adverse effects resulting or likely to result from human

⁵⁸ Statement of Evidence of David Fletcher, 27 July 2020 at [26] to [29].

⁵⁹ For instance, Mr Sullivan's recommendations to address the isolated annual TEL exceedance predicted at the boundary of the southern end of the Port of Tauranga. Statement of Evidence of David Sullivan, 27 July 2020 at [20], [95].

⁶⁰ Statement of Evidence of Mark Pemberton, 27 July 2020 at [73] to [75]. Dr Pemberton also concludes that the current TELs are no longer fit for purpose because adverse human health effects are unlikely to occur at the current TELs. It is not part of STIMBR's application that the TELs should be changed to reflect decreased human health risk.

⁶¹ ESR Reports above n 56.

⁶² Decision HRC08002 at 16.11.7.

activities which modify or are likely to modify the ozone layer".⁶³ This purpose is implemented under detailed regulations,⁶⁴ which explicitly provide for continued use of methyl bromide for legitimate quarantine and pre-shipment applications, without constraint.⁶⁵

55. Taking this into account, STIMBR submits that any indirect benefits for human health and the environment due to reduction of methyl bromide emissions cannot be a proper basis for imposing a recapture obligation; or alternatively cannot justify the selection of one particular recapture standard over another.
56. If the DMC should reach a different conclusion, then STIMBR submits that the Montreal Protocol (and Vienna Convention), have in fact reduced use of methyl bromide worldwide to such a degree that any incremental benefit that might result from the choice of what recapture standard to apply to New Zealand's remaining QPS uses, is too indirect to provide a basis for setting the recapture standard.

Benefits

57. The final reason for ERMA's decision to impose a recapture obligation was that it would allow for continued use of methyl bromide and enable the following benefits to be retained:⁶⁶
 - (a) the prevention of the introduction of human disease vector organisms;
 - (b) the prevention of the introduction and establishment of an exotic pest/disease; and
 - (c) access to overseas markets, particularly for the export of logs.
58. STIMBR has obtained an economic assessment of the benefits associated with the recapture obligation from Mr Murray. He has compared two futures: one with the recapture standard as it presently is, and one with the recapture standard amended so as to be achievable with existing or foreseeable technology.

⁶³ Ozone Layer Protection Act 1996, s 4.

⁶⁴ The Ozone Layer Protection Regulations 1996.

⁶⁵ At clause 7.

⁶⁶ Decision HRC08002 at 16.11.8.

59. Mr Murray's evidence will be that:
- (a) the recapture obligation in its present form would impact on the import and export of several types of fresh produce and on the export of logs to India and China;
 - (b) avoiding those impacts by setting the recapture obligation at an achievable level would, in comparison, result in an economic benefit of at least \$2.2 – \$3.2 billion over the next decade; and
 - (c) because of the economic uncertainties due to Covid-19, those economic benefits are more likely to lie at the upper end of the range.
60. Mr Murray has adhered to the guidance in the Methodology Order, and STIMBR relies on his assessment.

Cultural matters

61. To the extent that the application may directly impact on the health and well-being of Māori, that is addressed above in the section on direct health effects.
62. STIMBR acknowledges that changes to the recapture obligation may impact on Māori culture and traditions and in particular may affect the ability of Māori to exercise kaitiakitanga. This has been reflected in the consultation undertaken by STIMBR as recorded in the evidence of Mr Gear.
63. However, such effects must be considered alongside the effects on Māori that would flow from the current recapture obligation. Inability to fumigate with methyl bromide would have a major economic impact on the large share of forestry held or managed by Māori interests, and on related enterprises on which many Māori depend for their livelihoods and well-being.
64. The proposed new recapture controls would protect Māori interests in the log export sector, and STIMBR submits such benefits are likely to outweigh any adverse impacts on Māori.

SOME CONCLUSIONS

65. There is only one aspect of the reassessment that may lead the DMC to consider the degree of uncertainty attaching to the evidence before it, and that is in relation to air dispersion modelling.

66. STIMBR will say that on careful analysis of the evidence, and in particular taking account of the collective weight of Mr Sullivan's, Dr Fletcher's and Dr Pemberton's evidence, the DMC will be able to conclude that any apparent uncertainty is resolved. In particular, the DMC will be able to conclude that when all the other controls are taken into account — particularly the TEL controls that apply at fumigation boundaries, and the WES that applies within those boundaries — there is negligible risk to human health and safety, and the benefits associated with a revised, achievable recapture control outweigh the costs. In other words, the reassessment fits squarely within the terms of clause 26 of the Methodology Order. On that basis, STIMBR submits the application for reassessment can be approved and the recapture controls amended in the manner sought by STIMBR.⁶⁷
67. In the event the DMC retains any concern that the risks to human health may be more than negligible, the application may still be granted if the DMC considers that the risks associated with continued QPS uses would be outweighed by the benefits of those uses.⁶⁸
68. If the DMC retains any concern about the science of air dispersion modelling and/or the disagreements on scientific or technical information between the various modellers, then the DMC is required to determine the materiality and significance of that uncertainty taking into account the extent of agreement.⁶⁹
69. STIMBR maintains that SEC's modelling can be relied on, and that the only potential area of disagreement that remains relates to the interpretation of the results, not the reliability of the results themselves. The major difference between the modellers is which percentiles should be used as the basis for your assessment. STIMBR will submit that Mr Sullivan's approach is more consistent with international best practice, and is well supported by Dr Fletcher's evidence, ESR's analysis,⁷⁰ and the joint approach taken by experts in the EDN hearing.⁷¹
70. If the DMC remains unconvinced on those matters, then clause 30 of the Methodology Order requires the DMC to take into account the need for caution in managing the adverse effects. STIMBR will say that the DMC can rely on the expert assessment of Dr Pemberton, and the independent reports

⁶⁷ Above at [11]—[19].

⁶⁸ Methodology Order, clause 27(1).

⁶⁹ Methodology Order, clause 29.

⁷⁰ ESR Reports, above n 56.

⁷¹ Above n 57.

of ESR,⁷² to conclude that there is significant conservatism in the current TELs. On this basis, any need for caution in managing potential adverse health effects is already well satisfied.

71. For all the reasons outlined above, STIMBR anticipates that the DMC will ultimately be able to conclude that the recapture controls proposed by STIMBR
- (a) will not compromise the health and safety of people and communities,
 - (b) will uphold New Zealand's international obligations, and
 - (c) unlike the current recapture controls, are achievable with existing or foreseeable technology, and will therefore enable New Zealand to continue to realise the significant benefits of QPS use of methyl bromide.

WITNESSES

72. STIMBR will call:
- (a) Don Hammond,
 - (b) Jack Armstrong,
 - (c) David Sullivan,
 - (d) David Fletcher,
 - (e) Mark Pemberton,
 - (f) Kieran Murray,
 - (g) Ian Gear,
 - (h) Lynne Clapham, and
 - (i) Chris Lee-Steere.



M J Slyfield
Counsel for STIMBR
11 August 2020

⁷² Above n 56.

Table 1-2: Changes to Far-Field Analysis (changes were limited to 99.99th percentile of the 24-hour averaging)

Note: e.g., 70% / 30% designates that 70 percent of the log stacks will have recapture, and the efficiency of the recapture process is 30 percent.

Scenario	1-Hour					24-Hour					Annual Average (Across 3-year Period)
	98 th	99.5 th	99.9 th	99.99 th	100 th	98 th	99.5 th	99.9 th	99.99 th ⁷³	100 th	
Base 2019 70% / 30% Limited to First Hour Emissions	0.20	0.57	1.35	3.94	12.13	0.03	0.06	0.11	0.48 0.52	0.52	0.0010
Base 2019 70% / 30%	0.05	0.21	0.67	2.18	15.42	0.03	0.06	0.11	0.25	0.65	0.0015
70% / 30%	0.05	0.24	0.69	2.49	27.81	0.03	0.07	0.13	0.32	1.17	0.0017
70% / 45%	0.05	0.23	0.69	2.30	9.43	0.03	0.06	0.14	0.15 0.40	0.40	0.0015
70% / 60 %	0.04	0.19	0.57	1.89	9.20	0.02	0.05	0.10	0.23 0.45	0.45	0.0015
70% / 80%	0.03	0.14	0.53	1.95	11.21	0.02	0.04	0.09	0.36	0.52	0.0014
Worst Case 0%/0%	0.06	0.31	0.87	3.46	33.19	0.04	0.08	0.18	0.54	1.41	0.0030
Low Rate 40 g/m ³ 70% / 30%	0.03	0.11	0.28	1.35	9.72	0.01	0.03	0.09	0.23 0.41	0.41	0.0009

⁷³ The 99.99th and 100th percentile for 24-hour averaging were sometimes the same value because of the smaller number of values after zero concentrations were removed from the distributions. In some cases, the updated program moved the 99.99th percentile to be identical to the 100th percentile when choosing between the top two values in the distribution.

Table 1-3: Changes to 8-hour Averaging Near-Field Probabilistic Analysis⁷⁴

(The changes are shown in cross-out)

Probabilistic Analysis

Distance (m)	<u>98th</u>					<u>99th</u>					<u>99.9th</u>					<u>100th</u>				
	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5</u>	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5</u>	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5</u>	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5</u>
10	2.3	2.2 2.7	3.0	1.5	1.4	2.6	4.0	4.0	2.4	1.6	3.9	6.7	7.3	7.4	4.0	3.9	7.9	8.6	7.7	4.0
30	1.5 1.3	1.2	2.3	0.8	0.8	1.5	2.0	2.9	1.1	1.2	2.4	3.7	5.9	4.9	2.4	2.4	5.7	6.8	5.1	2.4
50	0.8	0.7	0.7 1.4	0.5	0.2 0.5	1.0	1.2	0.9 2.2	0.7	0.3 0.8	1.6	2.3	4.7	3.5	1.7	1.6	4.3	5.4	3.7	1.7
90	0.4	0.4	0.3 0.8	0.2	0.1 0.3	0.5	0.5	0.4 1.6	0.3	0.1 0.5	0.9	1.1	3.5	2.2	1.1	0.8	2.7	3.6	2.4	1.0

⁷⁴ Note that the processing for these runs is considered to be accurate to within 0.1 ppm when computing the maximum concentrations as a function of distance. Differences within 0.1 ppm were considered to be the same value.