New Zealand National Management Strategy for the phase-out of Methyl Bromide Critical Use Exemptions

Prepared by the Ministry of Economic Development in cooperation with Strawberry Growers New Zealand Inc and in consultation with the Ministry for the Environment

January 2006

1 Introduction

This document has been produced in response to the Decision Ex I/4 (3) made at the First Extraordinary Meeting of the Parties to the Montreal Protocol in March 2004:

"*To request each Party which makes a critical-use nomination after 2005 to submit a national management strategy for phase-out of critical uses of methyl bromide to the Ozone Secretariat before 1 February 2006. The management strategy should aim, among other things:*

- *To avoid any increase in methyl bromide consumption except for unforeseen circumstances;*
- *To encourage the use of alternatives through the use of expedited procedures, where possible, to develop, register and deploy technically and economically feasible alternatives;*
- *To provide information, for each current pre-harvest and post-harvest use for which a nomination is planned, on the potential market penetration of newly deployed alternatives and alternatives which may be used in the near future, to bring forward the time when it is estimated that methyl bromide consumption for such uses can be reduced and/or ultimately eliminated;*
- *To promote the implementation of measures which ensure that any emissions of methyl bromide are minimized;*
- *To show how the management strategy will be implemented to promote the phase-out of uses of methyl bromide as soon as technically and economically feasible alternatives are available, in particular describing the steps which the Party is taking in regard to subparagraph (b) (iii) of paragraph 1 of Decision IX/6 in respect of research programmes in non-Article 5 Parties and the adoption of alternatives by Article 5 Parties.*

This document discusses an initial transition plan for the ending of use of methyl bromide for critical uses in New Zealand.

New Zealand currently has two critical use exemptions for 2006. This recognises that the circumstances of New Zealand's nomination met the agreed criteria to allow a quantity of critical use of methyl bromide:

1. Strawberry fruit growers.
2. Strawberry runner growers.

These two exemptions have been re-nominated for the 2007 year. To all intents and purposes, the two nominations are treated as one in this National Management Strategy.

2 Background

The degree of international concern that followed the scientific confirmation of widespread stratospheric ozone depletion was reflected in the Vienna Convention for the Protection of the Ozone Layer. The Convention of 22 March 1985 promoted the need for global action to reduce the incidence of ozone depletion. New Zealand signed the Convention in March 1986 and ratified it in June 1987. 189 countries have ratified, accepted or approved the Convention.

New Zealand played a significant role in the formulation of a subsequent Protocol to the Convention, which aimed to reduce consumption of ozone depleting substances. The Montreal Protocol on Substances that Deplete the Ozone Layer was agreed to on 16 September 1987, and New Zealand was the sixth country to ratify it.

Both the World Meteorological Organisation and United Nations Environment Programme have completed studies that confirm the effectiveness of the Montreal Protocol. The total amount of ozone depleting compounds in the lower atmosphere (troposphere) peaked in 1994 and is now slowly declining. Without action under the Protocol the total quantity of ozone depleting substances in the atmosphere would, by 2050, be five times today's level.

The health of the ozone layer is of particular importance to New Zealand because:

- there is naturally less ozone above the southern hemisphere than above the northern hemisphere;
- southern hemisphere countries in general and New Zealand in particular move closer to the sun during late summer and early autumn than do northern hemisphere countries;
- New Zealand has cleaner air than many countries (air pollution absorbs UV);
- many New Zealanders are fair skinned and therefore are at greater risk of skin cancers (New Zealand has one of the highest rates of skin cancer in the world per head of population);
- as a country reliant on agricultural and fishing resources we depend on good plant growth and a healthy marine environment.

New Zealand contributes to the science on ozone depletion through the research undertaken by National Institute of Water and Atmospheric Research at Lauder, Central Otago.

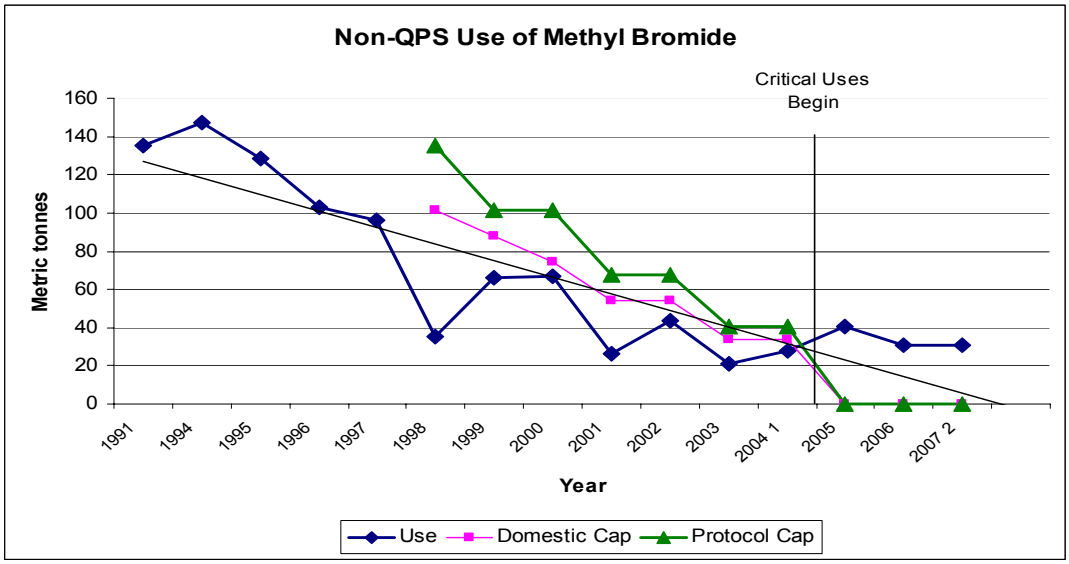
3 Methyl Bromide use in New Zealand

Methyl bromide is not produced in New Zealand and all quantities are imported under domestic controls designed to reduce New Zealand's reliance on ozone depleting substances by progressively restricting volumes that are imported. Methyl bromide phase-out in New Zealand was accelerated from that required by the Protocol.

Methyl Bromide Phase-out Schedules

Year	New Zealand Reduction	Exemptions	Montreal Protocol Reduction	Exemptions
1991	Base Year			
1995	0%	QPS[1]	0%	QPS
1998	25%	QPS	0%	QPS
1999	35%	QPS	25%	QPS
2000	45%	QPS	25%	QPS
2001	60%	QPS	50%	QPS
2003	75%	QPS	70%	QPS
2005	100%	QPS + Critical Uses	100%	QPS + Critical Uses

Non-QPS use in New Zealand shows the success of the phase-out schedule. Note that in terms of world use of methyl bromide for critical uses, New Zealand represents a tiny fraction, less than one half of one percent in 2005[2].



1 Phase-out date of methyl bromide for non-QPS purposes.
2 Note that the amount of the 2007 CUNs will be determined by the Parties in late 2006.

The Ministry of Economic Development manages, under delegated authority from the Minister of Commerce, the import system and those controls relating to manufacture, sales and unlawful release of ozone depleting substances. This includes the administration and monitoring of "base consumption" levels for the importation of controlled substances, and the consideration of permit and exemption applications for imports of controlled and prohibited substances. The Ministry for the Environment leads on policy issues. The relevant legislation is the *Ozone Layer Protection Act 1996* and the *Ozone Layer Protection Regulations 1996*.

[1] QPS: Quarantine and pre-shipment applications
[2] Based on percentage of total of 13,158 metric tonnes recommended by TEAP in 2005.

4 The Strawberry Industry

The strawberry industry consists of five runner stock growers in the Katikati and Ohakune area who supply daughter plants for about one hundred strawberry fruit growers. The Auckland region produces over forty percent of the commercial crop, but strawberries are also grown in other regions within New Zealand, such as the Waikato, Hawke's Bay, Horowhenua and Canterbury. The industry is labour intensive and is estimated to employ over 2000 casual workers over the height of the picking season (December and January). Most growers belong to an industry group, Strawberry Growers New Zealand Inc with whom the Ministry liaises.

Strawberries are the largest berry fruit industry in New Zealand with an estimated value of NZ$22 million per annum. Strawberry production comprises almost half of the total berry fruit production in New Zealand. The export strawberry industry was worth an estimated NZ$11.5 million in 2003 however, the proportion of total production supplied to the domestic market continues to increase. This is because of the high New Zealand dollar and international competition in the main export markets, the United States and Asia.

New Zealand has high rainfall and silty loam and silty-clay loam soils in its major growing areas that cause various fungi and weed control problems in commercial production. The industry losses due to fungal diseases are estimated at up to NZ$4.4 million per annum. Soil fumigation with methyl bromide, multiple aerial plant/fruit spraying and plastic wrap mulching have been implemented and are required to manage fungal disease to economically viable levels.

Chemical alternatives available currently or previously tested in New Zealand include less effective fungicides such as metam sodium; dazomet or chloropicrin; or chemical 'cocktails' of chloropicrin and other chemicals, such as dichloropropene, the use of which can entail water contamination and worker safety concerns. Possible non-chemical options include crop rotation, organic plant extract application to target fungi or weeds; soil sterilisation with steam or solar heating; and mulching to suppress weeds.

However, information to hand suggests use of such alternatives would likely result in:

- reduced yields and inferior plant health and vigour;
- reduced pathogen suppression (particularly in seasons with climatic conditions conducive to disease);
- a need for increased chemical application rates and greater attention to pre-treatment ground preparation to ensure increased ground penetration of the less effective fumigants, and
- the need for specialised application equipment for alternative chemicals.

Additionally, because the majority of New Zealand's strawberry growers are located in regions with relatively high land prices, options such as crop rotation are potentially costly.

5 Critical Uses

It is recognised by the Parties to the Protocol that critical uses are technically complex and that many interests are at stake that has meant that the agreed phase-out of methyl bromide has been problematic.

In 2004 New Zealand applied for critical use exemptions for methyl bromide for strawberry runner beds, strawberry fruiting beds and general nursery use. The two applications for the fumigation for fungi and weeds of strawberry fruit bed soil and of strawberry runner stock soil respectively were permitted by the Parties.

New Zealand was permitted the use of 40.5 tonnes in total for both uses in 2005 at the Sixteenth Meeting of the Parties to the Montreal Protocol held in November 2004.

The nomination for use by New Zealand's strawberry industry in 2006 was reconsidered by the Parties at the Second Extraordinary Meeting of the Parties in June 2005 and 30.5 tonnes in total for both uses was permitted by the Parties for 2006.

6 Allocation Process

The Ministry of Economic Development administers an allocation process to equitably distribute the permitted amount of methyl bromide within the strawberry industry. After applications are received, amounts are allocated taking into account the following assumptions:

- that the lack of availability of methyl bromide for strawberry fruit or strawberry runner growing would result in a significant market disruption;
- that there are no technically and economically feasible alternatives or substitutes available to the user that are acceptable from the standpoint of environment and health and are suitable to the crops and circumstances;
- that dense polythene will be laid over fumigated beds on application to minimise emissions of methyl bromide into the atmosphere;
- that no grower should be allocated more methyl bromide than they received in the previous year unless this can be clearly justified by exceptional circumstances;
- that only those growers who reported on the use of methyl bromide as a condition of the 2005 allocation should be eligible to apply for a methyl bromide allocation in 2006;
- that the MBTOC presumptions (see Appendix 1) should apply unless a deviation can be clearly and robustly justified.

Import permits for the specific allocated amounts are issued as exemptions to import a prohibited substance under the *Ozone Layer Protection Regulations 1996* to individual growers who nominate a supplier to import on their behalf.

Growers must report to the Ministry after fumigation on the actual amount of methyl bromide applied and the area of land fumigated. These details are confirmed with fumigators, suppliers and data from the New Zealand Customs Service.

7 New Zealand Government Policy

Notwithstanding the difficulties faced by the strawberry industry in ceasing the use of methyl bromide, the New Zealand government has determined that 2007 will be the last nominations that will be supported for the critical use of methyl bromide by the strawberry industry.

Why government support for only one more year?

The government is committed to protection of the ozone layer. New Zealand is a major beneficiary of international action to prevent damage to the ozone layer. The strawberry industry has been on notice since 1995 that the continued use of methyl bromide is not environmentally sustainable and must cease. In 1997 the final phase-out date for the end of use of methyl bromide for non-QPS use was set for 31 December 2004. Despite the large scale research, trialling and expenditure by the New Zealand strawberry industry, it was unable by 31 December 2004 to find a technically and economically viable alternative. The permitting of critical use exemptions was then allowed to ease the transition to the available alternatives in the face of recognised difficulties with those alternatives. This process has and will, if the current nominations are accepted, provide the industry with a further three years to make this transition.

Why then were any further nominations supported by the government?

Under the Montreal Protocol criteria for critical uses in Decision IX/6, the nominating party must determine that the use of methyl bromide is "critical" because:

- the lack of availability of methyl bromide for that use would result in a significant market disruption; and
- there are no technically and economically feasible alternatives or substitutes available to the user that are acceptable from the standpoint of environment and health and are suitable to the crops and circumstances of the nomination.

The information provided by the strawberry industry indicated that there would be a significant drop in yield and gross margins for many growers from the wholesale use in 2007 of the most likely alternative Telone C35. It is recognised there are ongoing difficulties with the effectiveness of this product, especially in sub-optimal weather conditions.

In addition, the current research into alternatives will not be completed until September 2007, leaving a number of growers in the industry without adequate soil management tools for the 2007 season unless methyl bromide is available. The presence of significant *Phytophthora* infection already in elite plants add to this difficulty as the entire New Zealand industry is supplied from the same source of elite plants. The plant material will take the infection into the ground and it will be extremely difficult to eradicate from nursery and fruiting beds with alternatives and without methyl bromide in 2007.

From the information provided by industry the New Zealand government has determined that the use of methyl bromide by the strawberry industry in 2007 for runner and fruit growing is a critical use.

Applying for exemptions for 2007 will allow a further year for the industry to cease use of methyl bromide. This will allow the industry to complete and implement the current research programme as well as other alternatives and substitutes, register new chemical alternatives and/or commission further research.

8 Strawberry Industry Transition

The New Zealand strawberry industry is willing to change to any alternative that has proven itself economically and technically feasible. It is critical the New Zealand industry continues with its research. The strawberry industry over the next two years expects to:

- Encourage growers to increase use of existing alternative products/practices on their gardens in the 2006 and 2007 seasons by providing advice to growers via industry newsletters and research seminars on use of existing alternative products/practices so their effectiveness can be optimised.

- Continue industry input into and support (in-kind, financial and trial work) of the current research programme *Sustainable Soil Management without Methyl Bromide* and provide updates to growers on progress by circulation of reports, research seminars, field days and updates on the sustainable farming fund website.

- By 2008 provide growers with a handbook of best practice on soil preparation, pro and cons of various alternative practices and ways to optimise use of alternatives. This is a direct output of the current research programme.

- Continue scientific research into improving the effectiveness of existing alternative soil fumigants to methyl bromide and existing alternative practices, including research garden and grower based trials.

    - The New Zealand Government together with the strawberry industry have been funding research into alternatives to methyl bromide since 1998. Telone C35 has been registered as a soil fumigant for the strawberry industry but it has been shown to have severe limitations in its ability to control the major soil diseases found in N.Z. soils which will impact on the yield and gross margins of the strawberry industry. Phytotoxicity problems with Telone C35 and lack of weed control are other problems which still need to be overcome.

    - A new three year research project on sustainable strawberry soil management without methyl bromide was begun in 2004 and will end in September 2007. The project is taking a holistic approach and is looking at alternative fumigants, non-fumigant alternatives, hygiene practices within the strawberry production chain, nursery management,

general soil management practices, and specific soil disease problems such as *Phytophthora*.

- Investigate avenues of funding/support for transition to new practices.

- Encourage and assist where possible with registration through the hazardous substances regulatory body, the Environmental Risk Management Authority, to permit trialling and ultimately industry use of promising alternative products such as methyl iodide and alternative mixes of dichloropropene and chloropicrin.

- Continue to monitor overseas research into alternative soil treatments and practices and seek expedited registration for trialling and eventual importing into New Zealand where appropriate.

- Provide growers with results of new research as they become available via incorporation into newsletters and dissemination of research reports.

Appendix 1

MBTOC Standard Presumptions for Pre-plant Fumigation

	Comment	CUN Adjustment	Exceptions*
1. Dosage Rates	Maximum guideline rates for MB/Pic 98:2 - 45 g/m2 (cold heavy soils) or 35 g/m2 (sandy soils), both with barrier films (VIF or equivalent); for MB/Pic 67:33 - 20 gMB/m2, under barrier films. Exceptionally, where VIF or equivalent is not feasible, maximum guideline rates for MB:Pic 98:2 - 60 g/m2. All rates on a 'per treated hectare' basis.	Amount adjusted to maximum guideline rates. Maximum rates set dependent on formulation and soil type and film availability.	Higher rates accepted if specified under national legislation or where the Party had justified otherwise.
2. Barrier Films	All treatments to be carried out under barrier film (e.g. VIF)	Nomination reduced proportionately to conform to barrier film use.	Where VIF prohibited or restricted by legislative or regulatory reasons
3. MB/Pic Formulation: Pathogen control	Unless otherwise specified, MB/Pic 50:50 (or similar) was considered to be the standard effective formulation for pathogen control as a transitional strategy to replace MB/Pic 98:2.	Nominated amount adjusted for use with MB/Pic 50:50 (or similar)	Where MB/Pic 50:50 is not registered, or chloropicrin is not registered
4. MB/Pic Formulation: Weeds/nutgrass control	Unless otherwise specified, MB/Pic 67:33 (or similar) was considered to be the standard effective formulation for control of resistant (tolerant) weeds, as a transitional strategy to replace MB/Pic 98:2.	Nominated amount adjusted for use with MB/Pic 67:33 (or similar)	Where chloropicrin or chloropicrin-contained mixtures are not registered
5. Strip vs. Broadacre	Fumigation with MB and mixtures to be carried out under strip	Where rates were shown in broadacre hectares, the CUN was adjusted to the MB rate relative to strip treatment (i.e. treated area). If not specified, the area under strip treatment was considered to represent 67% of the total area.	Where strip treatment was not feasible e.g. some protected cultivation or open field production of high health propagative material

VIF - virtually impermeable film
MB - methyl bromide
Pic- chloropicrin

* and also except where where the Party making the CUN demonstrates that they are technically or economically infeasible.