MONTREAL PROTOCOL

ON SUBSTANCES THAT DEPLETE

THE OZONE LAYER

UNEP

REPORT OF THE
TECHNOLOGY AND ECONOMIC ASSESSMENT PANEL

OCTOBER 2004

CRITICAL USE NOMINATIONS FOR METHYL BROMIDE
FINAL REPORT

Montreal Protocol
On Substances that Deplete the Ozone Layer

Report of the
UNEP Technology and Economic Assessment Panel

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The text of this report is composed in Times New Roman.

Co-ordination: **Methyl Bromide Technical Options Committee**

Composition and layout of the report:
Jonathan Banks & Ian Porter

Reproduction: UNON Nairobi

Date: 13 October 2004

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UNITED NATIONS ENVIRONMENT PROGRAMME
Ozone Secretariat, P.O. Box 30552, Nairobi, Kenya

Normally from SMI Distribution Service Ltd., Stevenage, Hertfordshire, UK, fax: + 44 1438 748844

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http://www.teap.org

ISBN: 92-807-2510-6

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Acknowledgement

The Technology and Economic Assessment Panel and its Methyl Bromide Technical Options Committee acknowledges with thanks the outstanding contributions from all of the individuals and organisations who provided support to Panel and Committee cochairs and members. The opinions expressed are those of the Panel and the Committee and do not necessarily reflect the reviews of any sponsoring or supporting organisation.

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1 Critical Use Nominations for Methyl Bromide – Final Evaluation of 2004 Nominations

1.1 MBTOC Evaluation of Critical Use Exemptions

1.1.1 Basis of Mandate

Under Article 2H of the Montreal Protocol the production and consumption (defined as production plus imports minus exports) of methyl bromide is to be phased out in Parties not operating under Article 5(1) of the Protocol by 1 January 2005. However, the Parties agreed to a provision enabling exemptions for those uses of methyl bromide that can be regarded as critical. Parties established criteria, under Decision IX/6 of the Protocol, which all such uses need to meet in order to be granted an exemption. The Decision IX/6 states that:

1. To apply the following criteria and procedure in assessing a critical methyl bromide use for the purposes of control measures in Article 2 of the Protocol:

(a) That a use of methyl bromide should qualify as "critical" only if the nominating Party determines that:

(i) The specific use is critical because the lack of availability of methyl bromide for that use would result in a significant market disruption; and

(ii) 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;

(b) That production and consumption, if any, of methyl bromide for critical uses should be permitted only if:

(i) All technically and economically feasible steps have been taken to minimise the critical use and any associated emission of methyl bromide;

(ii) Methyl bromide is not available in sufficient quantity and quality from existing stocks of banked or recycled methyl bromide, also bearing in mind the developing countries' need for methyl bromide;

(iii) It is demonstrated that an appropriate effort is being made to evaluate, commercialise and secure national regulatory approval of alternatives and substitutes, taking into consideration the circumstances of the particular nomination and the special needs of Article 5 Parties, including lack of financial and expert resources, institutional capacity, and information. Non-Article 5 Parties must demonstrate that research programmes are in place to develop and deploy alternatives and substitutes. Article 5 Parties must demonstrate that feasible alternatives shall be adopted as soon as

they are confirmed as suitable to the Party's specific conditions and/or that they have applied to the Multilateral Fund or other sources for assistance in identifying, evaluating, adapting and demonstrating such options;

2. To request the Technology and Economic Assessment Panel to review nominations and make recommendations based on the criteria established in paragraphs 1 (a) (ii) and 1 (b) of the present decision;

3. That the present decision will apply to Parties operating under Article 5 and Parties not so operating only after the phase-out date applicable to those Parties.

Para. 2 of Decision IX/6 does not assign TEAP the responsibility for determining the existence of "significant market disruption" specified in paragraph 1(a)(i).

TEAP assigned its Methyl Bromide Technical Options Committee (MBTOC) to assess whether 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*, and to address the criteria listed in Decision IX/6 1(b).

Evaluations in this 2004 round of CUNs were made in accordance with Decision Ex. I/5(7) that required evaluations to be categorized as "recommended", "not recommended" or "unable to assess". Decision Ex. I/5(8) determined that if TEAP and MBTOC did not recommend any part of a nomination, a clear description should be given of the nominating Party's request for an exemption and of the reasons why TEAP and MBTOC did not accept it, including references to the relevant studies, wherever available, used as the basis for such a *decision*.

TEAP and its MBTOC prepared a handbook on Critical Use Nomination (CUN) procedures, as requested in Decision XIII/11. The second edition of 'The Handbook on Critical Use Nominations for Methyl Bromide' was published in August 2003. It sets out a framework, process and the steps leading to a critical use exemption (CUE). Most Parties submitted nominations in conformance with the second edition. The Handbook is presently under revision. This is being undertaken in accordance with Decision Ex. I/4(9). The revision is being undertaken in order to comply with the wishes of the Parties and to incorporate their recent decisions.

1.1.2 MBTOC and TEAP process for consideration of CUNs

Some Parties submitted nominations to the Ozone Secretariat prior to the originally prescribed 31 January 2004 deadline, while other Parties submitted nominations by 28 February 2004, an extended deadline agreed at the EMOP.

MBTOC cochairs received CUNs from UNEP's Ozone Secretariat during March 2004. MBTOC met in Montreal, Canada, from 26 March to 1 April 2004 to consider nominations. Check list style evaluation forms were generated to provide the Committee with the ability to assess the large number of nominations efficiently and equitably. These include reference to the basis for the questions asked as part of the evaluation, specifically relevant sections of Decision IX/6 or the Handbook (August 2003 version).

In addition to the normal Disclosure of Interest required under the TEAP/TOC terms of reference, MBTOC members made an additional disclosure relating specifically to their level of national, regional or enterprise involvement in the 2004 CUN process. This ensured that those with a high level of involvement and interest in developing a particular nomination did not bias the process of evaluation through participation in the detailed review. A few MBTOC members were disqualified from review of specific nominations as a result of this process.

A soil subcommittee in MBTOC considered the nominations relating to use of MB for soil fumigation, while a postharvest subcommittee considered the nominations relating to the use of MB for fumigation of commodities, structures and objects. All drafts arising from the subcommittees were considered in plenary, with decisions reached by consensus.

As with previous evaluations, MBTOC used a variety of sources of information in addition to the information given in particular CUNs. In order of preference these included literature published in scientific journals, published results of projects and case studies, papers presented at different workshops and symposia relating to methyl bromide and MBTOC's own expertise.

As with consideration of the 2003 round of CUNs, MBTOC sought additional information or clarification from nominating Parties on a number of nominations. These had been evaluated as 'unable to assess' category in the interim evaluation of June 2004 (TEAP 2004a). A list of specific questions pertaining to each CUN placed in the "unable to assess" category was sent to the Parties involved in mid-June 2004.

MBTOC held bilateral meetings on CUNs in the margins of the 25th OEWG with those Parties that requested them. Several Parties indicated they were

pleased with the opportunity to meet with MBTOC. MBTOC also found such meetings to be very useful.

MBTOC met in Bangkok during the week of August 30 – September 3 2004 to finalise evaluation of the 2004 round of CUNs and, in particular, to consider additional information provided by nominating Parties on those 34 CUNs previously categorised as 'unable to assess'.

The Ozone Secretariat also received correspondence from several Parties in relation to particular MBTOC/TEAP evaluations. This was forwarded to MBTOC. Some of this correspondence related to CUNs that had been recommended with a reduced methyl bromide quantity calculated by applying a standardised 20% reduction to allow for phase in of recognised alternatives according to the schedule given in Interim Report (TEAP 2004a). MBTOC amended its recommendation or associated text in the detailed evaluation of the CUNs where technical errors were identified or where a Party provided additional information concerning its own nomination.

In response to one letter received by the Ozone Secretariat and forwarded to MBTOC, MBTOC clarified the grounds for evaluation but made no changes to quantities recommended for CUEs.

This report on the 2004 round of CUNs incorporates advice from these bilateral consultations and consideration of further technical and economic information provided on nominations, as foreshadowed in Decision Ex. I/5(8). No changes were made to any evaluations given in the interim report of June 2004, apart from matters of clarification, except to those for which further input was received from Parties.

Membership of MBTOC is given in Annex 2.

1.2 Critical Use Nominations Review

In considering the CUNs submitted in 2004 at both its 2004 meetings, MBTOC applied the same standards, wherever possible, that it used in 2003 for evaluations published in the February 2003 report of TEAP (TEAP 2004b). In particular MBTOC sought to provide consistent treatment of CUNs within and between Parties, and for specific crops and situations. However, each year new research, advances in regulation, and approval and adoption of alternatives raise the availability of alternatives, and the ability of Parties to adopt them.

1.2.1 Consideration of alternatives

In evaluating the CUNs for soil treatments, MBTOC assumed that a technically feasible alternative to MB would need to provide sufficient pest

and weed control for continued production of that crop to existing market standards.

For commodity and structural applications, it was assumed that the objectives of the MB treatment, e.g. meeting infestation standards in finished product from a mill or in the mill structure, such as required by regulation, would be met by any process considered a technically feasible alternative to MB.

Furthermore, MBTOC relied on the definition of alternatives to MB used in its 2002 Assessment (MBTOC 2003). This reads, in part:

Definition of an alternative

- MBTOC defined 'alternatives' as those non-chemical or chemical treatments and/or procedures that are technically feasible for controlling pests, thus avoiding or replacing the use of MB. 'Existing alternatives' are those in present or past use in some regions. 'Potential alternatives' are those in the process of investigation or development.
- MBTOC assumed that an alternative demonstrated in one region of the world would be technically applicable in another unless there were obvious constraints to the contrary e.g., a very different climate or pest complex.

Where a Party stated that one or more alternatives were not available because of economic considerations, MBTOC referred these to the agricultural economists in the panel who reviewed the information provided by the Party, and offered expert opinion to assist in the final evaluation. The meaning of economic feasibility in the sense of Decision IX/6 is still under consideration.

1.2.2 Aggregation and disaggregation of nominations

Some nominations, as received, covered several discrete areas of methyl bromide usage. To allow a technical and economic evaluation of such CUNs these were either disaggregated by MBTOC or the Party was requested to provide further information to allow the original CUN to be split into two or more new CUNs.

In contrast, some nominations from a Party covered the same area of usage, but originated from different organisations. These could have reasonably been aggregated as they would share a common technical evaluation.

There were many less instances of these problems than in the 2003 round of nominations.

1.2.3 Period of nominations

The EMOP, in considering the 2003 round of CUNs, decided on approving CUEs only for MB use in 2005. Most Parties submitted CUNs in the 2004 round for only 2005 or 2006, or both. Several Parties submitted nominations with longer timeframes. In this report MBTOC provides evaluations only of nominations for 2005 and 2006.

Technical difficulties with the evaluation of CUNs for beyond 2005 and 2006 in this round were similar to those encountered for multiyear nominations in the previous round of nominations. These were discussed in the May and October 2003 reports of TEAP (TEAP 2003ab) although longer timeframes were envisaged in 'The Handbook on Critical Use Nominations for Methyl Bromide' of August 2003.

1.2.4 EMOP CUEs and increased use of MB

There was little consistency between CUNs with regard to treatment of projected increases in crop area potentially requiring MB and for which a CUE was sought. One Party specifically excluded any new areas from its calculations, using historical usage usually for 2002 as its baseline and limit, while others increased some requests to allow new production areas or usage. MBTOC made no changes to nominated quantities solely on the basis of increased usage.

Since nominations for the 2004 round of CUNs were submitted to the Ozone Secretariat prior to the decisions of the EMOP on the 2003 round, nominations in the 2004 round did not reflect decisions made at that meeting. In its analyses, MBTOC used the CUEs approved at EMOP as baseline quantities on which to judge whether there had been an increase in the quantity nominated. Any adjustments that were included in the approved CUEs for 2005 were routinely applied to nominations for 2006 unless there were clear indications that these had become inappropriate.

1.2.5 Plans to develop, register and deploy alternatives

To qualify for a CUE, Decision XI/6 in part states that Parties must demonstrate that "...an appropriate effort is being made to evaluate, commercialise and secure national regulatory approval of alternatives and substitutes, taking into consideration the circumstances of the particular nomination.... " and "…must demonstrate that research programmes are in place to develop and deploy alternatives and substitutes …"

In many nominations in the 2004 round, as in the 2003 round, plans to identify alternatives were often quite limited or even absent, and future plans on how

to phase out MB were not given. As with the 2003 round, MBTOC did not use this lack of plans as a basis to 'not recommend' a nomination.

Decision Ex. I/4 considers in part the need for Parties that make "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".

MBTOC recognises that the uses of MB for soil and postharvest fumigation are mature technologies. In contrast, there is limited experience with some alternatives. These need local adaptation and development of infrastructure before full commercial adoption can take place. Sometimes changes in practice must occur, and these can be from mild to extreme: changes may be small or they may involve completely different production systems e.g. substrates.

TEAP and MBTOC recognised that the need for time to effect phasein/scaleup of alternatives is a reasonable technical argument for lack of availability to the end user sensu Dec. IX/6. Several CUNs in both the 2003 and 2004 rounds argued that, although alternatives were potentially available, time was required to allow the relevant industry to transition to these alternatives. Some CUNs showed a reduction in nominated quantity between the one for 2005 and for 2006, reflecting progressive adoption of alternatives, while others had the same or similar quantities of MB nominated for both years, despite the availability of alternatives. In some cases the alternatives were identified in the CUN and in others they were identified by MBTOC.

1.2.6 Registration and regulatory restrictions

As when considering CUNs in the 2003 round, MBTOC recognised that registration and local regulations can be constraints on the availability of particular chemical alternatives to the end user, in the sense of Decision IX/6, and are thus grounds for recommending a CUE if no other suitable alternatives are available.

Registration status of chemical alternatives varies from country to country, although some alternatives are widely registered. Registration may also vary within countries. The differing registration status of two specific key chemical alternatives, 1,3-dichloropropene (1,3-D) and chloropicrin (Pic), sometimes resulted in different evaluations in otherwise similar uses of MB for nominations from different Parties.

In certain countries, states or regions, regulatory restrictions such as buffer zones or township caps apply to some chemical fumigants. In cases where buffer zones are the same size for both MB and alternatives, the buffer zones are not relevant to the consideration of CUNs. However, MBTOC considers

the continued use of methyl bromide justified under the criteria in Decision IX/6 in a few cases where buffer zones are larger for an alternative fumigant than for MB, provided that no other effective alternatives can be used in this situation. The same reasoning applies to township caps.

Legislation in some Parties requires that pesticides, including methyl bromide, be used at the labelled rate, without discretion to use less than the labelled rate. In some instances MBTOC has recommended that particular maximum guideline rates be used for the purposes of calculation of the amounts for a CUE. Where this guideline rate is less than the labelled rate and there is no discretion to change rates, the labelled rate has been used to evaluate CUNs.

Uncertainties in the registration status and long term availability of both MB and some key chemical alternatives and potential impact on nominations for CUEs have been discussed previously (TEAP 2003ab, 2004a).

A few new alternatives have been registered in the brief period since preparation of the interim (June 2004) report. These include sulfuryl fluoride in the United Kingdom as a fumigant for empty flour mills and fosthiazate, an organophosphate nematicide, for tomatoes in the USA. Registration of potential alternatives to MB continues to be urgently needed to allow further progress in phaseout of MB in some problem areas.

1.2.7 Suggested adjustments to nominated quantities.

1.2.7.1 Adjustments to standard dosage rates.

Decision IX/6 states in part that 'critical uses should be permitted only if 'all technically and economically feasible steps have been taken to minimise the critical use and any associated emission of methyl bromide'. In its evaluations MBTOC assessed CUNs where possible for appropriate MB application rates and deployment of MB emission reduction technologies, such as use of barrier films or other appropriate sealing techniques.

In the soils sector, some CUNs involve the use of MB apparently with polyethylene sheeting (tarping). This process is known to lead to high rates of emission of MB in the absence of other measures such as deep injection. MB use and emission rates can be reduced substantially through use of much less pervious tarping, such as VIF (Virtually Impermeable Film) or equivalent barrier sheets, allowing increased retention of MB, extended effective exposure periods, and reduced MB application rates compared with use of conventional sheeting.

As in the evaluations of the 2003 nomination round, MBTOC reduced quantities of MB in particular nominations to a standard rate per treated area. It was expected that VIF or similar barrier films would be used to retain gas

effectively and allow extended exposures. MBTOC considers the maximum MB application rate, on its own, of either 350 kg/ha (warm sandy soils) or 450 kg/ha (heavier cool soils), in conjunction with VIF or equivalent, combined with extended exposure periods, as effective in most circumstances when well applied. In cases where use of high chloropicrin-containing mixtures (approximately MB:Pic/67:33) was feasible, dosage rates of 200 kgMB/ha were regarded as reasonable.

The indicative rates used by MBTOC were maximum guideline rates, for the purpose of calculation only. MBTOC recognises that the actual rate appropriate for a specific use may vary with local circumstances, soil conditions and the target pest situation. Some nominations were based on rates lower than these indicative rates, but did not use barrier film technology to reduce emissions.

Quantities in CUNs were recalculated to conform to these specifications, including use of VIF or equivalent. Reductions were not made if the Party provided a substantive argument otherwise (e.g. unusually tolerant pests) or when there were regulatory requirements to use specific rates.

As noted by TEAP (TEAP 2004a), use of VIF or similar barrier films results in better retention of methyl bromide compared with polyethylene tarps. Appropriate worker safety and other protective measures need to be in place to avoid unacceptable and unexpected exposures. In some jurisdictions, use of VIF or equivalent films are restricted. Most of the problems with use of VIF described in the 2002 MBTOC Assessment Report (MBTOC 2003) have now been overcome, at least for some versions of VIF film. VIF are in routine use in several countries and are under evaluation elsewhere.

In commodities/structures it is feasible to reduce the amount of MB and emissions by the use of improved sealing techniques in combination with longer exposure periods. Monitoring the course of a fumigation can be used to ensure that no more than the effective dosage is used. In general the average dosage rates quoted in the CUNs, typically around 20 g m^{-3} for mills and similar structures, are reasonable.

1.2.7.2 Rate of adoption of alternative

Several CUNs in the 2003 round contained information that showed the transition away from MB had not started sufficiently early to achieve orderly change to the alternative(s) to meet the 2005 phaseout schedule under the Protocol. This was also apparent in the 2004 round.

There is limited guidance and data available on what is a reasonable rate of transition to existing and available alternatives. Where nominations for substantial and complex industries were made for both 2005 and 2006 that

showed phasein of alternatives, this typically showed a change of 10-20% reduction of MB use between 2005 and 2006.

Although in some instances multiple small users make transition difficult, experience in Multilateral Fund projects has shown that very large numbers of MB users can be trained in the use of alternatives in one year, and that the installation and adoption of alternatives (even not-in-kind alternatives) can occur rapidly when well-organized training and technology transfer programs are implemented. In the first year of a project in Argentina, for example, about 3000 farmers were trained in the effective use of MB alternatives, alternative systems were installed on these farms, and as a result the MB consumption in this sector was reduced quickly and substantially. Although there are some differences between a Fund assisted transition and a free market transition, this example is brought to illustrate the types of activities that can aid a Party in meeting phaseout requirements.

MBTOC observed that in some Parties, the use of canisters containing about 0.5 kg MB is still allowed. Replacing this use is particularly difficult in situations where they are used for small scale applications and where mechanised access is restricted. Supply of MB in these small cans is no longer permitted in many developed countries.

Under terms of Decision Ex. I/4(3), each Party that makes a critical-use nomination after 2005 has to submit a national management strategy for its methyl bromide phase-out. Each management plan will include estimates of annual market penetration of alternatives to bring forward the time when it is estimated that methyl bromide consumption for such uses can be reduced and/or ultimately eliminated.

Where there was no change in quantity of methyl bromide used based on historical data or between nominations for 2005 and 2006 and in the temporary absence of such detailed management plans, TEAP and its MBTOC adopted an interim standardised phasein schedule (TEAP 2004a) for nominations where MBTOC recognised existing technically feasible alternatives were available and where, in the absence of indications from the Party, there were no regulatory or other reasons preventing reductions. MBTOC observed that, with the diversity of industries concerned and lack of detailed data on feasible rates of transition, each CUN should be evaluated according to its specific circumstances.

Successful implementation of alternatives typically has a conservative first-year penetration, followed by rapid expansions, and then more gradual phaseout completion. In instances where technically feasible alternatives were available, MBTOC typically suggested a 10 – 20% reduction factor, according to circumstances to allow for commercial development, scaleup and development of infrastructure for the alternative technology, unless the Party

provided alternative transition plans. The reduction factor was applied to part or all of the nomination as appropriate, with baseline chosen according to circumstances.

1.3 Final evaluations of CUNs – 2004 round

In its Interim Report (TEAP 2004) on the 2004 round of CUNs, TEAP and its MBTOC evaluated the nominations according the categories given in Decision Ex. I/5(7), being "recommended", "not recommended" or "unable to assess". No changes were made to evaluations of CUNs categorised as "recommended" and "not recommended" unless further information or requests for reconsideration were received from the nominating Party.

Further information was received from all 12 Parties that had nominations evaluated as "unable to assess" in the Interim Report. This category comprised new, additional or deferred CUNs totalling 1037 tonnes (25% of total nominations) for 2005 and new or resubmitted CUNs totalling 9854 tonnes (64% of total) for 2006. Five Parties submitted further information with relation to their CUNs although it had not been solicited by MBTOC. Some of these submissions specifically requested reconsideration of reductions suggested as a result of application of the standardised reduction schedule. This information was considered and sometimes led to changed recommendations, where MBTOC found a miscalculation or where cogent argument was presented that the evaluation was not appropriate, technically or economically.

Several Parties changed their quantities as previously nominated: 20 were reduced, 2 were increased, one by nearly 19%. One Party withdrew two of their CUNs.

MBTOC reassessed the 'unable to assess' CUNs on the basis of the original application and further information provided, taking into account the decisions of the EMOP, particularly in regard to the CUE quantity authorised for 2005 and with reference to CUNs from the 2003 round where necessary.

MBTOC reclassified nominations placed in the 'unable to assess' category into the three categories, given below, in accordance with Decision Ex. I/5(7), based on criteria of technical and economic feasibility as instructed by Parties, particularly Decision IX/6 and elaborated in the CUE handbook:

- 'recommended' - information contained in the nomination or available to MBTOC (and consistent with the MBTOC Assessment reports) documents that the nominated use satisfies the criteria of 'critical' within the context of Decision IX/6.

- ‘not recommended’ - MBTOC determined that there are technically and economically feasible alternatives available to the user for the nominated use.

- ‘unable to assess’ - information contained in the nomination or available to MBTOC was insufficient to evaluate the nomination according to the criteria of Decision IX/6.

Interim evaluations of each CUN, and of the one CUN submitted for reconsideration at the EMOP, are given in detail in Annex 1 of the TEAP June 2004 interim report. MBTOC was ‘unable to assess’ 34 nominations of the 115 CUNs submitted in the 2004 round of nominations.

In general, CUNs resulted from the following issues: regulatory barriers, scale up of alternatives, economic issues. For the most part technical alternatives exist. MBTOC has been unable to identify alternatives, or has very inadequate info for the following applications: fresh high-moisture dates, seeds when rapid turn around is required for immediate planting, cheese stores, ham processing, bakeries, aeroplanes and ship accommodation and unmovable historical artefacts especially where fungi is of concern. The Parties are requested to consider focusing research on these applications to identify and register effective alternatives.

On some occasions MBTOC has suggested quantities of MB for 2005 or 2006 different from that nominated. Arguments used for these changes are given in Section 1.2.7. above and in detail after the relevant CUNs in Annex 1.

Final evaluations of the 2004 round of CUNs, including both unchanged evaluations and those with altered evaluations as a result of MBTOC/TEAP considerations subsequent to the 25th OEWG are summarised on a Party by Party basis in Table 1 and given in detail in Annex 1.

Table 1. Summary of nominations and evaluations – 2004 round of nominations

	CUN03		CUN04							
	2005						2006			
Party	Nominated for 2005 in Jan/Feb 03	Approved CUE by EMOP	New or additional nomination for 2005	Recommended	Not recommended	Unable to assess	Nomination for 2006	Recommended	Not recommended	Unable to assess
Australia	205.05	145	1.9	1.9			81.25	65.85	15.4	
Belgium	89.77	47	14.125	12.824	1.301		0.3	0.3		
Canada	55.152	55	6.84	6.84			53.897	44.851	9.046	
France	565	407	85.135	67.673	17.463		478.885	429.065	49.820	
Germany			45.25	45.25						
Greece	350	186	41.28	41.28						
Israel	1100		1117.156	1053.256	63.9		1081.506	880.295	199.789	1.422
Italy	2840	2133	165.5	149.2	16.3		2430.5	1746.2	554.3	130
Japan	284	284	464	429.2	34.8		653.4	581.2	72.2	
Netherlands	1.2		0.12	0.12						
New Zealand			53.085	50	3.085		53.085	42	11.085	
Poland			44.1	44.1			44	43.56		
Portugal	200	50								
Spain	1159	1059					955.89	942	14.32	
Switzerland			8.7	8.7			7	7		
UK	147.551	128	6.33	6.33			74	64.9	9.1	
USA	9920.986	7659	833.011	584.093	248.918		9379.159	6886.017	2194.583	298.559
Totals	16917.71	12153.00	2886.53	2500.79	385.74	0.00	15292.43	11732.83	3129.62	429.98

1.4 Issues arising in the review of CUNs

1.4.1 Need for additional data

Two particular groups of CUN were of concern to MBTOC during the course of the evaluation of both the 2003 and 2004 round of nominations. These involved nominations for a CUE for specific uses of MB in production of nursery or propagation stock, including strawberry runners, and for orchard replant. There is potential for continuing nominations for these uses unless performance data becomes available to show one or more of the many apparent alternatives are feasible in the particular production systems involved. The alternative(s) should meet satisfactory practical industrial standards of economic and technical performance.

1.4.1.1 Nursery stock

A substantial number of CUNs requested a CUE for retention of MB for treatment of soils use for production of nursery stock to provide 'disease free' material for cropping industries (e.g. strawberries, fruit trees, forestry). Many of these nominations were based on the stated need for 'disease free' stock that required production in fumigated soils (mandatory MB or not). Some nominations were for production of propagation material that was required to meet government or industry certification standards for 'disease free' plants. In general, no data was provided on whether alternatives were able to produce adequately 'disease free' material, or whether appropriate levels of crop or commodity performance were achieved when compared to MB.

To date, MBTOC has tended to recommend CUEs for many nursery stock CUNs, after consideration of the specific circumstances of the nomination. It would be of assistance in future evaluations if nominating Parties were to provide more detailed data on comparative disease tolerance levels and in field crop growth and performance for nursery stock treated with different alternatives and planted into subsequent cropping systems.

1.4.1.2 Replant disease

Several CUNs have requested a CUE for continued use of MB for orchard replant disease, often without knowing the full range of pests being involved or without clear clarification of the target problem requiring treatment specifically with MB. In this situation, MBTOC accepted the Parties' claim that alternatives were not available, however future nomination may clearly specify the major target pests, and provide comparative growth performance or disease levels on crops over an extended (3 years) period to support the nomination.

1.4.2 Dependence on single measures for pest control

Crop production that is dependent on the use of a single pesticide is at risk of disruption if effectiveness is reduced because of appearance of a resistant strain of a key pathogen, the manufacturer removes the product from the market, or new regulatory actions are taken which restrict use. When a pesticide is removed from the market, the production system faces significant disruption while growers and associated concerns find and gain experience with a new alternative. If more than one management option is actively used within an agricultural sector, and one is lost, the remaining options can fill the void. Growers and post-harvest pesticide users have long been encouraged to rotate the use of pesticides to reduce risk that pests may develop resistance to any one pesticide. Rotation of pesticides also can be beneficial through utilising the different spectra of activity against pests given by the different materials. Use of multiple strategies contributes to the development of a more stable agro-ecosystem. Furthermore, a single alternative controlled by a single registrant or manufacturer raises concerns about long-term availability and affordability. As growers and researchers face the methyl bromide phaseout, there is a tendency to search for a drop-in replacement. If such an alternative is identified and implemented widely and later circumstances arise which remove it from the market, growers will find themselves in a distressingly familiar situation. MBTOC suggests that continued identification, development, demonstration, and implementation of a diverse suite of management options, used singly or in combinations, will reduce the potential for future production disruption due to the loss of a key management option.

1.4.3 Technical need for multiyear CUEs

While there are arguments that have led TEAP and its MBTOC to only recommend CUEs on an annual basis (TEAP 2004b), there is a technical justification for spreading a CUE over more than one year in some instances. In the period when methyl bromide use is still regarded as critical in particular circumstances, a transitional reduction in methyl bromide use may be achieved by application of methyl bromide at greater than yearly intervals. As examples, some flour mills may be able to maintain appropriate levels of pest incidence using various IPM practices but may need to supplement these on a biennial basis with whole site fumigation. In some soil fumigations, it may be appropriate to manage pests and diseases using alternative technologies but to have recourse to methyl bromide on an occasional basis as part of the management system. Italian regulations specify methyl bromide can only be used once every two years on a particular field.

Exemptions covering more than one year in such instances would lead to minimising the use of methyl bromide and remove the incentive to use all of an allocation within a year. Concerns regarding treatment of newly registered alternatives in a multiyear context would remain. These would be reduced if

only a short period of multi-year allocations was allowed, for example 2-3 years, and if the multi-year exemption was only approved if a substantial decrease of methyl bromide consumption was requested over time.

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Annex 1: Final Evaluation of Critical Use Nominations, 2004 Round of Nominations.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
Australia	Au56N4	Almonds, Almondco		1.1	1.1	**1.1**	**1.1**	MBTOC recommends a CUE of 1.1 tonnes for both 2005 and 2006 for this use. Various research programmes are in place to identify possible alternatives. The need for rapid throughput restricts the potential alternatives. An economic study might be useful to identify the financial (and logistic) consequences of various possible options to create a base for a rational decision how to change the system to avoid MB use. Since mostly fumigation chambers are used, the implementation of a scrubbing system could be an option for the transition time to non MB alternatives. Rapid-acting alternative fumigants such as SF and COS are not currently registered for this commodity in Australia. It is envisaged that increased trade may lead to an increased requirement for disinfestation.
Australia	Au56N5	Almonds, Kyndalyn		0.8	1.0	**0.8**	**1.0**	MBTOC recommends a CUE of 0.8 tonnes for 2005 and of 1.0 tonnes for 2006 for this use. The need for rapids throughput restrict the potential alternatives. Experiments with an alternative fumigant (VAPORMATE) are in progress. Positive results could lead to pronounced reduction of MB use. Heat and phosphine (ECO2FUME) is considered to offer an alternative if short lethal exposure can be established. Since mostly fumigation chambers are used, the implementation of a scrubbing system could be an option for the transition time to non MB alternatives.
Australia	Auc6N1	Cut flowers - Queensland	28.8		*22.35*		**22.35**	MBTOC recommends a CUE of 22.35 tonnes for 2006 for this use, as in the revised nomination by the Party, being for 14.35 tonnes for field production and 8 tonnes for protected production of cut flowers. MBTOC acknowledges efforts made by Party to reduce MB use and that the Party does not anticipate further CUNs for this use after 2006. MBTOC observes that important alternatives are registered for field production, e.g. 1,3-D/Pic, and encourages the Party to continue validation of alternative and consideration of other technical options (eg. substrates).
Australia	CUN2003/003, Auc6N2	Cut flowers, bulbs - protected	7		7		**5.25**	MBTOC recommends a reduced CUE of 5.25 tonnes for 2006 for this use. The reduction is based on scaling the application rate from 600 to 450 kg/ha as a result of use of VIF. Not all crops can be successfully grown in substrates and chemical fumigant alternatives are presently considered unsuitable under the specific circumstances of the nomination (steeply sloping ground). Party is requested to provide an update on progress in technical trials and adoption of the use of alternatives. MBTOC recognizes that steam may be expensive but negative pressure steaming is a cheaper option that may suit a proportion of that requested.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
Australia	CUN2003/004, 6, Auc6N6	Rice (consumer packs)	6.15		12.3		**6.15**	MBTOC recommends a reduced CUE of 6.15 tonnes for 2006 be approved for this use. This reduced quantity is on the same basis as that approved for 2005. MBTOC notes that trials are now underway as a result of MBTOC's 2005 recommendation to verify whether the reduced allocation is effective under the circumstances of the nomination.
Australia	CUN2003/006, Auc6N3	Strawberry runners	35.75		37.5		**30**	MBTOC recommends a reduced CUE of 30 tonnes of MB for 2006 be approved for this use. CUN has been scaled to take into account use of VIF and a maximum dosage rate of 200kgMB/ha with MB/Pic mixtures. The CUN states that MB is required to meet certification standards and that a key alternative, 1,3-D/Pic, is reported to have been phytotoxic due to the heavy and wet soil conditions. The CUN provided recent data from a specific local trial indicated phytotoxicity in runners that result in doubling the time required before planting compared to MB. Although 1,3-D/Pic is considered a promising alternative to MB in strawberry runner production, further research is required on the effects of this alternative. The CUN states that plug plants are a technically feasible alternative but that the costs associated with this technology are regarded as too high.The Party is already using a lowered rate of MB, 250 kg/ha, and is examining the efficacy of 30:70 mixtures of MB/Pic. MBTOC considers that difficulties in using VIFs on a broadacre basis to reduce emissions can be overcome, leading to further reduced usage of MB.
Belgium	B5-N2	Mills		0.2		**0.2**		MBTOC recommends a CUE of 0.2 tonnes for 2005 for this use. MBTOC commends the party for adoption of alternatives minimising the use of MB for this application.
Belgium	B5-N3	Objects, antiques, books, furniture		0.15		**N**		MBTOC does not recommend this CUN. There are various alternatives available for all the applications in this CUN e.g. humidified nitrogen, gamma irradiation, use of cold (MBTOC 2002, Reichmuth 2001)
Belgium	B5-N4	Electronic equipment		0.1		**0.1**		MBTOC recommends a CUE of 0.1 tonnes for 2005 for this specific use on electronic equipment located in various situations. Inert gases and sulphuryl fluoride are not registered for this purpose in Belgium at this time.
Belgium	B5-N5	Woodworking premises		0.3		**0.3**		MBTOC recommends a CUE of 0.3 tonnes for 2005.
Belgium	B56N6	Food premises		0.3	0.3	**0.3**	**0.3**	MBTOC recommends a CUE of 0.3 tonnes for both 2005 and 2006 for this use. MBTOC commends the party for adoption of alternatives minimising the use of MB and encourages further adoption of non-MB control measures.
Belgium	B5-N7	Food storage (dry) structure		0.12		**0.12**		MBTOC recommends a CUE of 0.12 tonnes for 2005 for this use. MBTOC commends the party for adoption of alternatives minimising the use of MB.
Belgium	B5-N8	Old buildings		0.7		**0.7**		MBTOC recommends a CUE of 0.7 tonnes for 2005 for this use. MBTOC recognises that in the absence of registration of alternative fumigants, e.g. SF, that do not corrode electrical components, an infested wooden house with electrical wirings may need MB for treatment.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
Belgium	B5-N9	Textiles		0.1		**N**		MBTOC does not recommend this CUN. Treatments of imports may be for quarantine pests. Movable textiles may be either cold treated or treated with modified atmospheres. Insecticide treatment may also be appropriate.
Belgium	B5-N10	Empty silo		0.05		**0.05**		MBTOC recommends a CUE of 0.05 tonnes for 2005 for this use. Small quantities of MB are needed to disinfest particular food storage equipment in the unusual and exceptional circumstance of failure of IPM and in the absence of alternatives. This event is likely to be limited to one company of the 37 companies in the industry, all of which have IPM programs in place.
Belgium	B5-N11	Food processing premises		0.03		**0.03**		MBTOC recommends a CUE of 0.03 tonnes for 2005 for this use.
Belgium	B5-N12	Old buildings		0.45		**0.45**		MBTOC recommends a CUE of 0.45 tonnes for 2005 for this use. MBTOC recognises that in the absence of registration of alternative fumigants, e.g. SF, that do not corrode electrical components, infested buildings with electrical wirings may sometimes need MB for treatment.
Belgium	B5-N13	Antique structures and furniture		0.75		**0.319**		MBTOC recommends a reduced CUE of 0.319 tonnes for 2006 specifically for the treatment of unmovable historical antiques and antique furniture under the particular circumstances of the CUN. The Party indicates a technically effective alternative exists but at an infeasible cost (about seven times more expensive). The CUN quantity has been reduced to exclude that requested for treatment of movable objects (0.431 tonnes) because feasible alternatives exist for this purpose. There are numerous alternatives for movable historical antique furniture. In Germany and other countries, many historical wooden artfacts are treated successfully with controlled atmospheres (CA), freezing, phosphine or inert gases under vacuum. The Party is already using controlled atmospheres successfully. The issue of time as a constraint is not relevant since it is not a critical factor in the fumigation process for these items. Gastightness is identified as one issue for the need to use MB as compared to CA, but there are commercial processes available that adequately cope with this problem.
Belgium	B5-N14	Flour mill		0.125		**0.125**		MBTOC recommends a CUE of 0.125 tonnes for 2005. MBTOC commends the party for adoption of alternatives minimising the use of MB and for instituting emission controls.
Belgium	B5-N15	Flour mills		10		**9.39**		MBTOC recommends a CUE of 9.39 tonnes for 2005 for this use. This quantity represents the projected use for 2005 and represents a decrease from 10 tonnes which was requested in the CUN. The users are encouraged to continue improvements in IPM methods. The Party has reduced the dosage rate from 40 g/m3 to 20 g/m3 by improved sealing. Improved sealing also allowed reduced frequency of fumigations.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
Belgium	B5-N16	Artefacts and structures		0.6		**0.59**		MBTOC recommends a CUE of 0.59 tonnes for 2005 for these uses in total, being 0.05 tonnes for treatment of aeroplanes, 0.39 tonnes for treatment of certain mill equipment and 0.15 tonnes for particular antique wooden structures in 2005. Principal alternatives (HCN, inert atmospheres, sulphuryl fluoride) are not registered for these purposes in Belgium. A component of this CUN for moveable antiques was withdrawn by the Party.
Belgium	B5-N17	Churches, monuments and ship's quarters		0.15		**0.15**		MBTOC recommends a CUE of 0.15 tonnes for the specific antique wooden structures and furniture therein, and infested ship's quarters in this nomination. Principal alternatives (HCN, inert atmospheres, sulphuryl fluoride) are not registered for these purposes in Belgium or are uneconomic. For ship's quarters, the alternatives are not rapid enough and would incur excessive demurrage.
Canada	Cac6N2	Pasta manufacturing facilities			10.457		**8.4**	MBTOC recommends a reduced CUE of 8.4 tonnes for 2006 for this use. No evidence was presented that indicated that any research has been carried out to test and implement alternatives. Implementation of IPM systems should allow reduced use and frequency of MB treatments on the same basis as for the similar situation for Canadian flour mills in 2006. The CUN has been reduced by 20% to allow for orderly phasein of alternatives. The Party requested reconsideration of this reduction. This request was received by MBTOC after its meeting to consider such matters.
Canada	Cac6N1	Flour mills			34.774		**27.8**	MBTOC recommends a reduced CUE of 28 tonnes for 2006 for this use. The applicant states that Canadian mills are in the process of expanding and intensify their IPM and heat programs. A significant reduction in the amount of MB required in 2006 should be achievable. The CUN has been reduced by 20% to allow for orderly phasein of alternatives.The Party requested reconsideration of this reduction. This request was received by MBTOC after its meeting to consider such matters.
Canada	Ca5-N4	Strawberry runners (PEI)		6.840	6.840	**6.840**	**6.840**	MBTOC recommends an additional CUE of 6.84 tonnes for both 2005 and 2006 for this use. A CUE of 7.952 tonnes for both 2005 and 2006 was approved at EMOP for a similar use. This nomination is for strawberry runners for which national regulatory controls are in place in both the nominating Party and the Parties that receive shipment of this material. The Party has determined that the useage covered by this CUN does not fall under QPS. MBTOC acknowledges that the recent ban of 1,3-D in the nominated region is a significant impediment to the Party in the transition away from MB. The Party is urged to consider use of reduced rates of MB with VIF as a transition strategy.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
Canada	CUN2003/009, Cac6N3	Strawberry runners (Quebec)			1.826		**1.826**	MBTOC recommends 1.826 tonnes for 2006 for this use. A CUE of 7.952 tonnes was approved at EMOP for 2005 for Canadian runner production that included this use. No trials data on alternatives in Canada was submitted to support this CUN. The Party has determined that the useage covered by this CUN does not fall under QPS. This nomination is for strawberry runners for which national regulatory controls are in place in both the nominating Party and the Parties that receive shipment of this material, but MB treatment is not a mandatory requirement for export. The Party is urged to consider use of reduced rates of MB with VIF as a transition strategy.
France	CUN2003/010, Frc6N1	Carrots	8		8		**8**	MBTOC recommends a CUE of 8 tonnes for 2006 for this use. MBTOC acknowledges the situation in this CUN appears unique, both in growing situation and critical pathogens. Carrots are grown worldwide without use of MB. Some trials with potential alternatives have been carried out but no research appears to have been conducted since 2001/02. The alternatives tested did not control a particular, important pest satisfactorily. The Party is urged to continue trials to find alternatives for this unique situation.
France	CUN2003/012, Frc6N13	Chestnuts	2.0		2.0		**2.0**	MBTOC recommends a CUE of 2.0 tonnes for 2006 for this use. No progress in developing alternatives have been reported and MBTOC does not recognise any available alternatives for this specific use. There may be scope for reduction of the high dosages of MB used at present.
France	CUN2003/013, Frc6N2	Cucurbits - protected and field		*60*	*60*	**60**	**60**	MBTOC recommends a CUE of 60 tonnes for each of 2005 and 2006 for this use, as in the revised nomination by the Party that specified a reduced acreage requiring MB treatment for crops grown in soil. MBTOC recognises that Phomopsis sclerotioïdes, a key pest, is difficult to control in soil with the limited alternatives available in France. MBTOC notes that elsewhere alternatives are available for this disease, especially fumigant combinations containing chloropicrin, but they are not registered in France. A large proportion, 75%, of cucumber production is already in soilless culture, but at present adoption by the remaining industry is considered uneconomic by the Party. It is hoped that MB requirements can be reduced by decreasing frequency of fumigation to once every two years through improved disease control using grafted plants.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
France	CUN2003/016, Frc6N8	Cut flowers, bulbs - protected and open field	60		*60.25*		**52**	MBTOC recommends a reduced CUE of 52 tonnes for 2006 for these uses. The Party reduced its original CUN to 60.25 tonnes on the basis of reduced acreage treated and reduced dosage rates of MB to 450 kg/ha. The Party considers technical alternatives are available for anemones and ranunculus culture (solarisation) and for lily of the valley (e.g. dazomet or metham sodium, combined with crop rotation to manage pathogen incidence) which represent 42% and 30% of the nomination respectively, but acknowledges that time will be required for commercial scale up. However, the Party contends that additional uptake of alternatives in these production systems will be limited due to loss of the second crop (economic loss) and the narrow market window for production of the commodity. A factor of 20% decrease has been applied to allow for this scaleup in 2006. Conversion to production of crops in substrates has been identified as a technically feasible alternative (UNEP 2004), but time will be required to optimise the system for some flower crops. MBTOC does not recommend a further 10 tonnes requested as a contingency for control of Pythium. Party states that alternatives raise some economic issues which are yet to be resolved.
France	Frc6N3	Eggplant			*27.5*		**22**	MBTOC recommends a reduced CUE of 22 tonnes for 2006 for this use, based on the reduced nomination of 27.5 tonnes made by the Party. The Party's reduction was based on a reduced dosage rate of 500 kg/ha. This exceeds MBTOC's guideline dosage of 350kg/ha under VIF for similar cultural conditions, but is mandated under national law. A reduction of 20% is suggested for commercial scale-up of technically available alternatives (e.g. soilless culture, resistant rootstocks, grafting) that are in widespread use in the Mediterranean region. Presently only 3% of eggplant is grown on substrate and 10% is grafted. Soilless culture is considered uneconomic in the CUN. According to the Party, several resistant genotypes and rootstocks are available but their use is limited by different races of fungal pathogens and by others factors such as temperature. Elsewhere grafting has led to substantial reduction in MB use (e.g. 30% grafted plants used in Sicily in 2004). Products containing chloropicrin are not currently registered in France, limiting the range available of recognised alternatives. MBTOC acknowledges that in France, grafting and soilless culture are at early stages of development for this crop. The Party is urged to evaluate and rapidly adopt the transitional strategies and alternatives available for the control of the key eggplant pathogens already adopted in many other countries, including reduced treatment frequency and dosage rates.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
France	CUN2003/014, Frc6N4	Forest nurseries	10		10		**10**	MBTOC recommends that a CUE of 10 tonnes be approved for this use. The CUN considers chloropicrin and/or DMDS might be alternatives although they are not registered in France and effective weed control needs to be established. Party may wish to include lower cost plate steaming or steaming/soilless culture technologies into the research program. Party is requested to provide more detailed data in future nominations on crop performance using alternatives, especially disease tolerance data of commodities or growth performance data for stock planted into cropping fields.
France	Frc6N7	Melon		10	10	**7.5**	**6.0**	MBTOC recommends a reduced CUE of 7.5 tonnes for 2005 and a further reduced CUE of 6.0 tonnes for 2006 for this use. The reductions are based on a reduced average dosage rate to 450 kg/ha with VIF and progressive implementation of alternatives. Alternatives such as grafting and specialised mulch plastics are already commercialised alternatives in similar production regions. Registration of chloropicrin-containing alternatives would increase range of options for this crop.
France	CUN2003/012, Frc6N14	Mills and Processors	40		40		**35**	MBTOC recommends a reduced CUE of 35 tonnes for this use. The reduction is to the historical average level of usage and recognising that some savings in methyl bromide can be made through reduced dosages combined with better sealing techniques. Use of MB is restricted to <18% of mills in France that cannot use presently available alternatives.
France	CUN2003/017, Frc6N5	Orchard and raspberry - replant	25		25		**25**	MBTOC recommends a CUE of 25 tonnes for 2006 for this use. The CUN is for the same quantity as for 2005. MBTOC recognizes that perennial crop replant disease is a problem for which alternatives to MB may not be adequately proven. MBTOC also acknowledges that the request is a substantial (55%) reduction from the amount used in 2000. Orchard is strip treated at a reduced rate under VIF. The main constraint to the adoption of alternatives is the inability to identify definitively what is causing replant disease and implement appropriate response. The Party states MB is used only where high nematode and fungal pathogens exist. Nematode problems without fungal problems are managed with 1,3-D. Moderate nematode and fungal populations are managed with 1,3-D combined with dazomet. One potential alternative for some situations, chloropicrin, is not registered in France.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
France	CUN2003/015, Frc6N6	Orchard and raspberry nurseries	5		5		**5**	MBTOC recommends a CUE of 5 tonnes for 2006 be approved for this use. The CUN is for the same quantity as for 2005. MBTOC's 2002 Assessment identified the level of disinfestation required for nursery certification as a problem for which alternatives to methyl bromide are generally inadequate. MBTOC encourages the Party to conduct research under nursery conditions, instead of relying on data extrapolated from orchard replant research trials. MBTOC further encourages the Party to provide more detailed information on pathogen levels on plants (pathogen tolerance) for those pathogens subject to certification requirements as a part of these research trials, as well as measuring plant vigor. Dazomet has resulted in less vigor than treatment with MB in past trials. 1,3-D is effective only when nematodes are the only pathogen, but not sufficient when pathogenic fungi are also present. One potential alternative for some situations, chloropicrin, is not registered in France.
France	Fr56N15	Peat		15	15	**N**	**N**	MBTOC does not recommend this CUN. At least one effective alternative is in routine commercial use. Soil pasteurisation with steam is widely used for substrate disinfestation in many neighbouring countries (Netherlands, Germany, etc.) and soil pasteurisation is well adapted for substrate disinfestation. The quantity to be fumigated is about 28,000 m3/year. This volume represents less than 6 ha of soil (60,000 m2 x 0,5 m depth).
France	Frc6N9	Peppers (o/p)			*27.5*		**27.5**	MBTOC recommends a CUE of 27.5 tonnes for 2006 for this use, as reduced by the Party. The Party's reduction was based on a reduced dosage rate of 500 kg/ha. This exceeds MBTOC's guideline dosage of 350kg/ha under VIF for similar cultural conditions, but is mandated under national law. Products containing chloropicrin are not currently registered in France, limiting the range available of recognised alternatives. Soilless culture is considered uneconomic in the CUN. Only 3% of peppers are currently grown on substrate and grafting is not used at present for this plant (suitable rootstocks not available). MBTOC acknowledges that in France, soilless culture is at an early stage of development for this crop. The Party is urged to evaluate and rapidly adopt the alternatives available for the control of the key pepper pathogens already adopted in many other countries.
France	CUN2003/012, Frc6N16	Rice (consumer packs)	2.0		2.0		**2.0**	MBTOC recommends that a CUE of 2.0 tonnes be approved for 2006 for this use. This is on the same basis as approved for 2005 by the EMOP. There appears to be scope for reduction in MB usage via slight increases in exposure time. The Party did not provide full information on what conditions result in use of MB, whether MB was used only with evidence of pest infestation and whether IPM or other methods that might reduce need for MB.
France	Fr56N17	Seeds (postharvest)		0.135	0.135	**0.135**	**0.135**	MBTOC recommends a CUE of 135 kg for both 2005 and 2006 be approved for this use. MBTOC agrees there are no alternatives in the specific situation for control of insects in large bulks of seeds when very rapid turn around is required for immediate planting.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
France	CUN2003/019, Frc6N11	Strawberry runners	40		40		**40**	MBTOC recommends a CUE of 40 tonnes for 2006 be approved for this use. France has a reduced range of alternatives available because products containing chloropicrin are not registered. They are currently under review by national authorities. Remaining alternatives available to the Party do not appear to provide equivalent yield performance compared to MB. The Party indicates that 350 and 400 kg/ha of MB are effective in controlling soilborne pests in research results. Many Parties use 400 kg/ha or lower dosage rates for similar circumstances. However, the Party indicats that 500 kg/ha are required by the national authorities to control soilborne pests and 400 kg/ha are required for treatment of nematodes. The CUN appears to be based on the maximum dosage without adjustment for incidence and levels of particular pathogens. Clarification is sought if rates can be revised to take into account adoption of VIF, preferably as a strip treatment.
France	CUN2003/020, Frc6N10	Strawberry fruit - protected and open field	90		86		**86**	MBTOC recommends a CUE of 86 tonnes for 2006 for this use. MBTOC considers that several alternatives are technically suitable for strawberry fruit production. A key component of these mixtures is chloropicrin, because of its effect on fungal pathogens. However, chloropicrin and mixtures containing chloropicrin are not registered in France. There has been promising research using drip-applied metham sodium, with commercialisation expected in 2007. Currently soilless cultivation accounts for 15% of the crop, and further adoption of the system is actively encouraged. A component of this nomination is for production specifically in soil to meet specific quality standards.
France	Frc6N12	Tomato			*60.5*		**48.4**	MBTOC recommends a reduced CUE of 48.4 tonnes for 2006 for this use, based on the reduced nomination of 60.5 tonnes made by the Party. The Party's reduction was based on a reduced dosage rate of 550 kg/ha. This exceeds MBTOC's guideline dosage of 350kg/ha for similar cultural conditions, but is mandated under national law. The area for which a CUE is requested is about 1.2% of the crop area. Products containing chloropicrin are not currently registered in France, limiting the range available of recognised alternatives. Despite this, MBTOC considers that technical alternatives are available for tomato under these cultural conditions. A reduction of 20% has been applied for commercial scale-up of available alternatives. Grafting is a widely used technique in many countries. In France, 30% of tomato are already grafted and resistant rootstocks are available for corky root, the main pathogen targetted by MB fumigation. Soilless culture is a well established technique in similar climatic regions, with 30% of tomato currently grown on substrates in France. 1,3-D and other some other soil fumigants (e.g. metham sodium, dazomet) are registered in France. These alternatives may be used alone or associated with other practices according to the occurring pathogen complex. The critical nature of the request remains unclear. The Party states initial investment costs limit the further uptake of soilless cultivation.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
Germany	D5-N1	Artefacts		0.25		**0.25**		MBTOC recommends that a CUE of 250 kg be approved for 2005 for this use, specifically fungal control in artefacts that are attached to interiors of historical buildings. Use of MB is minimised by sheeting off the specific zone that requires treatment and emission control measures in place as required by regulation. A research program for alternatives is in place. CO2 will only control growth of fungi and does not kill fungi. SF not effective. MBTOC agrees there are no alternatives for control of fungi for unmovable historical artefacts.
Germany	D5-N2	Mills and Processors		45		**45**		MBTOC recommends that a CUE of 45 tonnes be approved for 2005 for this use. MBTOC requests the Party to use best practices to reducing emissions and improved IPM practices to reduce use of MB where possible. MBTOC suggests that the Party continue to investigate improvements to heat treatment methods to improve results for larger mills.
Greece	Gr5-N1	Cut flowers		*14*		**14**		MBTOC recommends a CUE of 14 tonnes for 2005 for these uses, based on a revised nomination by the Party. This is a reduction from 32.48 tonnes initially nominated, similar to historical levels, as a result of decrease in MB rates with VIF to those consistent with MB guideline levels (350 kg/ha). Chloropicrin and mixtures thereof are not registered in Greece for cut flower production, limiting range of alternatives available. The Party also states that although substrates (coco peat) are technically feasible they are expensive. Transition to substrate systems for rose growing is limited by investment costs, but 30% of the sector uses hydroponic production methods. The principal crops, carnations, roses and gypsophila, are produced without MB in many parts of the world under apparently similar conditions, suggesting transition should be feasible.
Greece	Gr 5-N2	Commodity Dried fruit		4.28		**4.28**		MBTOC recommends a CUE of 4.28 tonnes for 2005 for this use. There is a specific need for methyl bromide to ensure fast fumigation after harvest in autumn to allow sale of product in time for the winter holiday season, a major market window. Available alternatives, phosphine, cold treatment and various CA processes, are not sufficiently rapid.
Greece	Gr5-N3	Mills and Processors		23		**23**		MBTOC recommends a CUE of 23 tonnes for this use for 2005. The Party has requested an amount that is 20% less than their stated minimum historical use. This allocation would allow for continued adoption of alternatives and development of non-MB IPM processes of pest control in these mills, as in use in many other countries.
Israel		Artefacts and libraries		0.650	0.650	**0.65**	**0.65**	MBTOC recommends a CUE of 0.65 tonnes for both 2005 and 2006 for this use. The MB use requested is for rapid disinfestation of non-moveable artefacts and portions of buildings and for books, documents and other artefacts that cannot be taken off site or are susceptible to damage by the alternative fumigant, phosphine. Alternatives, including ethylene oxide and sulfuryl fluoride treatment, are not available.

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Israel	CUN2003/022, Is56N3	Cut flowers - protected		*303*	*303*	**303**	**240**	MBTOC recommends that a CUE for 303 tonnes for 2005 for this use and a reduced CUE of 240 tonnes for 2006 for this use. This is on the basis that fumigant alternatives, including chloropicrin-based mixtures, are unavailable for use because of lack of registration or regulatory issues, steaming is not economic in the particular situation, but that alternative cultural practices such as soilless culture can be phased in to reduce MB use as elsewhere. The nominated quantity is consistent with MBTOC guidelines (350 kg/ha under VIF). MBTOC recognises efforts made by the Party to reduce MB usage in the past. A reduction of 20% for the 2006 CUN is suggested to allow for orderly phasein of alternatives.
Israel	Is56N5a	Cut flowers - open field		77	67	**77**	**67**	MBTOC recommends a CUE for 77 tonnes for 2005 and of 67 tonnes for 2006 for this use. This is on the basis that fumigant alternatives, including chloropicrin-based mixtures, are unavailable for use because of lack of registration or regulatory issues. The nominated quantity is consistent with MBTOC guidelines (350 kg/ha under VIF). MBTOC recognises efforts made by the Party to reduce MB usage in the past.
Israel	Is5-N1a	Dates (postharvest)		3.444	3.444	**3.444**	**2.755**	MBTOC recommends that a CUE of 3.444 tonnes be approved for 2005 and a reduced CUE of 2.755 tonnes for 2006 for this use. MBTOC recognises that the applicant has described a phase out plan for 2006 or 2007, and that this request is specifically for a transition period. The CUN for 2006 has been reduced to allow for progressive phasein of alternatives.
Israel		Flour mills (machinery and storages)		*2.14*	*1.49*	**2.14**	**1.49**	MBTOC recommends CUEs of 2.14 and 1.49 tonnes for 2005 and 2006 respectively for this use, as in the revised nomination by the Party. The Party reduced its initial CUN for 2005 by 30% with further reductions in 2006, following decisions to implement non-MB IPM programs in all licensed mills. Implementation of IPM should result in reductions of MB fumigation frequency. This nomination is associated with certain older mill structures, which present particular challenges for using IPM alternatives.
Israel		Furniture - imported		1.422	1.422	**1.422**	**U**	MBTOC recommends a CUE of 1.422 tonnes for 2005 be approved for this use. The fumigation is conducted at the dockside where space is restricted. The principal alternative against the nominated insect pests, phosphine, requires a longer exposure time than MB leading to larger space requirements for the treatment. It is noted that the nomination is against pests likely to be listed in future as quarantine pests with the result that this use would then fall under the QPS exemption. A new nomination is suggested for 2006 if this should not happen.

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Israel	Is56N2	Fruit tree nurseries		50	45	**50**	**45**	MBTOC recommends a CUE for 50 tonnes for 2005 and 45 tonnes for 2006 of MB be approved for this use. MBTOC recognizes the importance of clean propagative material and MBTOC's 2002 Assessment has identified the level of disinfestation required for nursery certification as a problem for which alternatives to methyl bromide for use in soil are generally inadequate. MBTOC further recognizes the effort to move to a containerised growing system ("detached bags") that does not require methyl bromide. Grape nurseries have moved 100% to this technology. Quality problems using this technology for apple seedlings which hampers the further expansion of this technology are being investigated. Other chemical alternatives (e.g. 1,3-D , metham sodium, Aldicarb, fenamiphos and cadusafos) are either not registered or insufficiently effective.
Israel	CUN2003/022, Is56N4	Melon - protected & field		148	142	**103.6**	**99.4**	MBTOC recommends that a reduced CUE of 104 tonnes be approved for 2005 and 99 tonnes for 2006 for this use. The CUN has been adjusted to utilise a rate of 350 kg/ha under VIF. There may be scope for further reduction through implementation of strip fumigation. MBTOC requests the Party to clarify proportion of the nomination impacted by buffer zones. MBTOC notes that there are transitional strategies (MB/Pic 70:30, or 50:50) and chemical alternatives in general for melon production but that registration and regulatory issues may prevent their use in this particular circumstance. MBTOC suggests adoption of grafting beyond 2006.
Israel	CUN2003/022, Is56N6	Potato		239	231	**239**	**165**	MBTOC recommends a CUE for 239 tonnes for 2005 and a reduced CUE of 165 tonnes for 2006 of MB be approved for this use. There is a complex disease issue. The reduction for 2006 is based on scaling the original quantity nominated to a dosage of 250 kg/ha, that the applicant has suggested may work for them. The applicant identified that MB is for use only in a regional area of specialised potato production where regulatory constraints are in place for alternatives. They also indicate that there are effective control alternatives for the pest complex elsewhere. MBTOC recognises that the specific region has used MB for production of potatoes historically although potatoes are grown worldwide without MB.
Israel	Is56N7	Seed production		56	50	**42**	**28**	MBTOC recommends reduced CUEs of 42 and 28 tonnes for 2005 and 2006 respectively for this use. The reductions from nominated quantities are for graduated phase in over a two-year period, in view of the special circumstances of the nomination, of VIF or equivalent emission reduction technology combined with dosage reduction from 700 kg/ha to MBTOC guideline levels of 350 kg/ha. Major components of the industry that produce certified seed for domestic and export markets have already changed to alternatives (steaming and substrate systems). This nomination is for small scale contract growers who do not currently have the necessary infrastructure or capital to change from methyl bromide in the short term. Current industry certification standards for seed health require either soil treatment with MB/formaldehyde or testing of seed. The latter is relatively expensive for small scale production.

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Israel	Is56N8	Silo bins		5.5	5.5	**N**	**N**	MBTOC does not recommend this CUN. There are alternatives available to achieve the same result as sought with MB. Technically, in an empty silo bin, few grains remain. Application of dichlorvos or phosphine should control the residual free-living insects on the bin walls effectively. A high turnover of grain should ensure any remaining immobile stages (eggs or pupae) are quickly eliminated through subsequent processing.
Israel	Is56N10	Strawberry runners		35	35	**35**	**35**	MBTOC recommends a CUE of 35 tonnes for both 2005 and 2006 be approved for this use. The CUN is calculated on the basis of use of 98% MB and VIF films. There may be scope for some reduction through use of MB/Pic mixtures where not precluded by large buffer zone restrictions (250 metres) due to the close proximity of farms to residential areas in the Sharon and Gaza regions. MBTOC acknowledges the Party has assessed the nominated amount using 350 kg/ha and the use of VIF. Although the Party has conducted extensive research trials on key alternatives (chloropicrin alone, Telone formulations) they are not yet registered. The Party is trialling methyl iodide as a replacement to MB.
Israel	CUN2003/022, Is56N9	Strawberries - fruit, protected and open field		196	196	**196**	**196**	MBTOC recommends a CUE of 161 tonnes for both 2005 and 2006 be approved for this use. MBTOC acknowledges that the Party provided extensive data on the alternatives and that several of the key alternatives (metham sodium, chloropicrin alone, 1,3-D formulations) are not yet registered. Fumigant mixtures containing chloropicrin are subject to large buffer zone restriction (250 meters) precluding use of such mixtures in strawberry fruit production due to the close proximity of farms to residential areas in the Sharon and Gaza regions. Data provided by the Party indicates that Basamid plus solarization performs comparably to methyl bromide and MBTOC requests that the Party indicate if a portion of strawberry fruit production may be able to use basamid plus solarisation as an alternative. MBTOC understands that solarisation alone is not feasible to implement due to a variety of constraints indicated in the CUN. The Party indicates that it is evaluating a change in their production system to suspended pots that will eliminate the need for methyl bromide by 2008 if commercially successful.
Italy	It5-N4	Artefacts		5.5	5.5	**5.225**	**5.225**	MBTOC recommends a reduced CUE of 5.225 tonnes for 2005 for this use and is unable to assess the CUN for 2006. The reduction suggested reflects a decrease in the Party's request by 5% to allow for treatment by non-MB processes of movable historical artefacts included in the CUN. There are alternative processes available for moveable artefacts, including heating, cooling and CA, as appropriate to the kind of artefact being treated. Further information is needed on pattern of previous use and availability of alternatives (e.g. sulphuryl fluoride, CA) for the specific circumstances of the nomination to allow an evaluation of critical need for 2006.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
Italy	CUN2003/025, It-6N1	Cut flowers, bulbs - protected	250		250		**187**	MBTOC recommends a reduced CUE of 187 tonnes for 2006 for this use. The availability of some alternatives is restricted by lack of registration of alternatives, particularly chloropicrin and chloropicrin-containing mixtures. The CUN is based on MB (98:2, hot gas, broadacre) used at rate of 500 kg/ha under VIF. The reduction of the nominated quantity is based on use of a rate of 350 kg/ha in southern Italy and 450 kg/ha in northern Italy. There appears to be scope for further reduction through introduction of alternatives, including steaming and substrate production, and use of strip fumigation. This recommendation was reevaluated at the request of the Party.
Italy	CUN2003/023, It-6N2	Eggplant - protected	194		200		**156**	MBTOC recommends a reduced CUE of 156 tonnes for 2006. The reduction in nominated quantity is based on scaling the nomination to 350 from 450 kg/ha under VIF (98:2, hot gas, broadacre) and a reduction of 20% to allow for further adoption of existing alternatives (e.g. Pic EC and 1,3-D used alone, grafting, soilless cultivation). There appears to be scope for additional reduction through adoption of strip fumigation and dosage optimisation. Published data (Cartia, 2002) has demonstrated that 300 kg/ha of MB (98:2) can be used successfully, together with alternatives such as grafting. Choice of alternatives is restricted by lack of registration of fumigant mixtures. This recommendation was reevaluated at the request of the Party.
Italy	CUN2003/024, It-6N3	Melon - protected	131		135		**131**	MBTOC recommends a reduced CUE of 131 tonnes for 2006. The reduction in nominated quantity is based on calculating the nomination on the basis of 350 kg/ha applied to 375 ha under VIF (98:2, hot gas, broadacre). Choice of alternatives is restricted by lack of registration of fumigant mixtures. The Party states that the flavour of melons produced on resistant (pumpkin) rootstocks is unacceptable to the market and that implementation of alternatives 1,3-D and Pic used alone have reached their maximum diffusion. A 20% reduction factor applied for scaleup in the interim report has been removed, following further information supplied by the Party. MBTOC recommends continued development of effective alternatives already commercialised in similar regions elsewhere, such as grafting, low dosage rates of MB/Pic, 1,3-D/Pic, metham sodium/Pic, and the use of plastic mulch and improved strip applications.
Italy	It5-N8	Mills and Processors		160	130	**144**	**U**	MBTOC recommends a reduced CUE of 144 tonnes for 2005 for this use and is unable to assess the CUN for 2006.This reduced amount reflects a 10% decrease in the Party's request because there are alternatives available for mills, including the newly registered sulphuryl fluoride, heat and improved IPM techniques. Allowance is made for time to introduce these technologies. MBTOC cannot evaluate the request for 2006 on the basis of information supplied by the Party. In particular, information is needed on quantities of MB used for this purpose in past years, number of facilities and their volumes, particular factors that lead to a critical requirement in particular premises and frequency of fumigation. In addition, for 2006, MBTOC requests more information about the rate of commercial uptake of sulfuryl fluoride and increased implementation of other alternatives..

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Italy	CUN2003/026, It-6N5	Pepper - protected	160		160		**130**	MBTOC recommends a reduced CUE of 130 tonnes for 2006. Application is based on MB (98:2, hot gas, broad acre) used at rate of 350 kg/ha with VIF. MBTOC notes that effective alternatives are available (e.g. Pic EC and 1,3-D used alone), particularly for the northern production region. Fungi are the key pathogens in the northern part of the country and chloropicrin is registered in Italy and can be used effectively for the control of the soil borne fungi. The quantity nominated has been adjusted to remove projected consumption for the northern region from the nomination, but has not been further adjusted to take into account additional transition to alternatives. Choice of alternatives is restricted by lack of registration of fumigant mixtures. Resistant rootstocks of adequate performance are not currently available for peppers. This recommendation was reevaluated at the request of the Party.
Italy	CUN2003/027, It-6N6	Strawberry fruit - protected	407		400		**320**	MBTOC recommends a reduced CUE of 320 tonnes for 2006 for this use. A reduction of 20% was suggested to allow scale up and further introduction of available alternatives. Though the range of alternatives available in Italy is restricted compared with some other similar strawberry-producing regions, as several are not registered there, some chemical alternatives are available (e.g. 1,3-D, Pic EC) and have been commercially adopted. MBTOC acknowledges a key alternative, 1,3-D/Pic applied as a mixture, is not currently registered in Italy. National law prohibits the simultaneous application of pesticides where the mixture is not registered. The only MB/Pic formulation registered is 98:2. National law only authorizes the use of methyl bromide on the same field once every 2 years. The national authority is currently evaluating 4 alternatives, with projected registration in 2007 or beyond. The Party used dosage rates of MB that fall within guideline levels set by MBTOC. This recommendation was reevaluated at the request of the Party.
Italy	CUN2003/027, It-6N7	Strawberry runners	120		120		**120**	MBTOC recommends a CUE of 120 tonnes for 2006 for this use. Potential alternative in-soil techniques are not adequately developed. The CUN is for the total area for runner production. Party has yet to define disease tolerance levels required in practice for nursery runners that could be used to benchmark alternatives against MB effectiveness. MBTOC acknowledges the general importance of clean nursery stock for the strawberry fruit industry.

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Italy	CUN2003/028, It-6N9	Tomato - protected	871		1030		**697**	MBTOC recommends a reduced CUE of 697 tonnes for this use in 2006. This is a suggested 20% reduction in the CUE for 2005 of 871 tonnes, also nominated for 2006 by the Party in a revised submission to allow for further scale up and implementation of the several available alternatives for this industry. MBTOC considers that there are various alternatives available for the control of the key tomato soilborne pathogens in integrated systems in the southern parts of the country, including 1,3-D, Pic, use of resistant cultivars, grafting and solarisation. MBTOC acknowledges an important alternative, 1,3-D/Pic applied as a mixture, is not currently registered in Italy and national law prohibits the simultaneous application of pesticides where the mixture is not registered. Alternatives have been available since 2002. In Italy, many nurseries are now producing resistant tomato grafted plants for the local market and for export. The Italian government is subsidising soil solarisation in the southern part of the country. Some countries with similar environmental conditions have not requested critical MB use for tomato.
Japan	CUN2003/029, J56N8	Chestnuts	4.6	2.5	6.5	**2.5**	**6.5**	MBTOC recommends a CUE for an additional 2.5 tonnes for 2005 and 6.5 tonnes for 2006 be approved for this use. MBTOC has not identified alternatives for this use. The CUN indicates a decrease in use in 2006. There appears to be an unusually high frequency of fumigation, but with reasonable dosages. There may be scope for further usage reduction by decreasing the frequency of treatment. MB use might be reduced by only fumigating full chambers, or by consolidating loads.
Japan	CUN2003/029, J5-N1	Cucumber	39.4	48.9	87.6	**48.9**	**87.6**	MBTOC recommends a CUE for an additional 48.9 tonnes for 2005 and 87.6 tonnes for 2006 of MB be approved for this use. No alternatives are recognised and available for control of soilborne Kyuri (Cucumber) Green Mottle Mosaic Virus. The CUN states that chloropicrin, metham ammonium and ethylene oxide are not registered because of ineffectiveness to control the disease. The Party states that attenuated virus strain could be one of the prospective substitutes, but requires further development. Hydroponics/substrate production have been considered but are said to be uneconomic to this crop.

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Japan	J5-N2	Ginger - field		119.4	119.4	**119.4**	**119.4**	MBTOC recommends a CUE of 119.4 t for both 2005 and for 2006 for this use. The two nominations for ginger production in Japan were previously not recommended as MBTOC, on basis of available evidence, considered there were adequate alternatives available. The Party has subsequently indicated the unique difficulties of their crop and cropping situation. The crop is produced in small fields in remote, hilly country by a large number of small scale farmers. MB is applied directly from small cans and mechanised injection systems are not available. Routine use of cans has been discontinued in most developed countries. Alternatives are stated to be uneconomic under these conditions. Alternative control measures for the key pathogen, Pythium, have not been yet been adequately tested in Japan for this crop. MBTOC suggests that the sanitation measures used in other countries (e.g. China, USA) should be tested locally to determine if MB use can be reduced or eliminated quickly with such measures.
Japan	J5-N3	Ginger - protected		22.9	22.9	**22.9**	**22.9**	MBTOC recommends a CUE of 22.9 t for both 2005 and for 2006 for this use. The two nominations for ginger production in Japan were previously not recommended as MBTOC, on basis of available evidence, considered there were adequate alternatives available. The Party has subsequently indicated the unique difficulties of their crop and cropping situation. The crop is produced in small fields in remote, hilly country by a large number of small scale farmers. MB is applied directly from small cans and mechanised injection systems are not available. Routine use of cans has been discontinued in most developed countries. Alternatives are stated to be uneconomic under these conditions. Alternative control measures for the key pathogen, Pythium, have not been yet been adequately tested in Japan for this crop. MBTOC suggests that the sanitation measures used in other countries (e.g. China, USA) should be tested locally to determine if MB use can be reduced or eliminated quickly with such measures.
Japan	CUN2003/029, J5-N5	Melon	94.5	99.6	171.6	**99.5**	**171.6**	MBTOC recommends a CUE for an additional 99.5 tonnes for 2005 and 171.6 tonnes for 2006 be approved for this use. No alternatives are recognised and available for control of soilborne Kyuri (Cucumber) Green Mottle Mosaic Virus and Melon Necrotic Spot Virus. The CUN states that chloropicrin, metham ammonium and ethylene oxide are not registered because of ineffectiveness to control the disease. The Party states that attenuated virus strain could be one of the prospective substitutes, but requires further development. Hydroponics/substrate production have been considered but are said to be uneconomic to this crop.

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Japan	J5-N6	Peppers (hot)		23.2	23.2	**18.6**	**13.9**	MBTOC recommends a reduced CUE of 18.6 tonnes in 2005 and 13.9 tonnes in 2006 for this use. The nomination is based on the stated need to control a particular virus of peppers. The suggested reductions are to allow time for implementation of new management strategies and sanitary practices that MBTOC considers could control the virus. Pepper mild mottle tobamovirus is transmitted by mechanical inoculation, grafting and contact between plants and by seeds, and can survive in debris, especially in fumigated soils. The problem appears to exist because of continuous cropping with peppers and is controlled in other countries by appropriate crop rotation, better crop sanitation and use of pathogen free seeds. The virus has been reported in many countries. In spite of the high severity of this virus in most of these countries, MB has never been used or requested for its control. The suggested reductions represent a 20% scale-in in first year and another 20% of initial nomination in the 2nd year.
Japan	CUN2003/029, J5-N4	Peppers (green)	74.1	92.6	*164.0*	**59.8**	**98.4**	MBTOC recommends a reduced additional CUE of 59.8 tonnes in 2005 and a total reduced CUE of 98.4 tonnes in 2006 for this use. The nomination is based on the stated need to control a particular virus of peppers and on a total nomination of 164.0 tonnes for 2005. The suggested reductions are to allow time for implementation of new management strategies and sanitary practices that MBTOC considers could control the virus. Pepper mild mottle tobamovirus is transmitted by mechanical inoculation, grafting and contact between plants and by seeds, and can survive in debris, especially in fumigated soils. The problem appears to exist because of continuous sucession of cropping with peppers and is controlled in other countries by appopriate crop rotation, better crop sanitation and use of pathogen free seeds. The virus has been reported in many countries. In spite of the high severity of this virus in most of these countries, critical use of MB has not been requested for its control. The suggested reductions represent a 20% scale-in in first year and another 20% of initial nomination in the 2nd year.
Japan	CUN2003/029, J5-N7	Watermelon	71.4	54.9	58.2	**57.6**	**60.9**	MBTOC recommends a CUE for an additional 57.6 tonnes for 2005 and 60.9 tonnes for 2006 of MB be approved for this use. No alternatives are recognised and available for control of soilborne Kyuri (Cucumber) Green Mottle Mosaic Virus. The CUN states that chloropicrin, metham ammonium and ethylene oxide are not registered because of ineffectiveness to control the disease. The Party states that attenuated virus strains could be one of the prospective substitutes, but requires further development. Hydroponics/substrate production have been considered but are said to be uneconomic to this crop. The quantities in this recommendation have been adjusted since the interim report to correct a transposition in the earlier figures.

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Netherlands	Nl5-N1	Strawberry runners - postharvest		0.12		**0.12**		MBTOC recommends a CUE of 0.12 tonnes for 2005 for this use. This CUN was previously 'not recommended' but the Party in an additional submission stated time was required to complete trials on alternatives currently in progress. There are recognised alternatives for this application (e.g. hot water dipping). MBTOC notes that the nominated MB fumigations are carried out in chambers fitted with recapture systems.
New Zealand	NZ56N3	Nursery material		1.085	1.085	**N**	**N**	MBTOC does not recommend this CUN. Several effective alternatives are currently available (e.g. metham sodium, Pic, and plug plants) that could be adopted.
New Zealand	NZ56N1	Strawberry fruit		*42*	*42*	**42**	**34**	MBTOC recommends a CUE of 42 tonnes for 2005 and a reduced CUE of 34 tonnes for 2006 for this use. Strawberries associated with this nomination appear to be produced in a difficult environment. There are application issues associated with the alternatives due to extremely high rainfall which has caused a key alternative (1,3-D/Pic) to have variable effectiveness and apparently to lose effect after some years of use. No other alternatives are available in this situation. Party needs additional time to optimise the use of alternatives in their unique climatic situation. The alternative, 1,3-D/Pic, is available and a reduction of 20% of the nomination is suggested for 2006 to allow for limited uptake of this alternative and improvements in application of MB mixtures associated with use of VIF or equivalent films. MBTOC recommends that the Party develop a research plan that focuses on application techniques, including the viability of using drip applications. The current dosage rate of 175 kgMB/ha in MB:Pic/50:50 under strips is close to MBTOC dosage guidelines, but is not used with barrier films.
New Zealand	NZ56N2	Strawberry runners		10	10	**8**	**8**	MBTOC recommends a reduced CUE of 8 tonnes of MB be approved for use in 2005 and in 2006. The nomination has been reduced for the use of VIF and a guideline maximum dosage rate of MB of 200 kg/ha in MB/Pic mixtures (e.g. 50:50). The Party requested a CUE on the basis that the key alternative (1,3-D/Pic) does not provide consistent disease and weed control based on recently performed local trials. In a subsequent submission, the Party states that the VIFs used did not perform adequately. Films of appropriate performance are available, at least in Europe. MBTOC acknowledges large variability shown in the performance data of 1,3-D/Pic, chloropicrin, and basamid presented by the Party. The Party states that weather conditions in the spring are such that delays in fumigation, associated with some alternatives, are likely to occur and cause economically unacceptable delays in planting.

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Poland	Pl56N1	Strawberry runners		40	40	**40**	**40**	MBTOC recommends a CUE of 40 tonnes for both 2005 and 2006 be approved for this use. The Party requests a CUE on the basis that available alternatives (metham sodium and Dazomet) do not provide adequate pest control required in strawberry runners produced for export and that key alternatives (1,3-D and chloropicrin) are not registered. The Party may wish to consider whether part or all of this CUN falls under QPS use of MB. MBTOC acknowledges that the Party has submitted a CUN based on 400 kg/ha for 98:2 MB and that the Party recognises a commitment to reduce the amounts of methyl bromide used despite the lack of technically feasible alternatives available to the Party at the present time. The Party is urged to consider further rate reductions by the adoption of VIF films and use of mixtures of MB/Pic (50:50) as a transition strategy.
Poland	Pl56N2	Structures (dry commodities)		*4*	*3.56*	**4.10**	**3.56**	MBTOC recommends a CUE of 4.10 tonnes for 2005 and 3.56 tonnes for 2006 for this use. The Party may wish to determine if logistical and efficacy constraints allow a potential 6% decrease in MB use (250 kg) by increasing vacuum treatment times for 12% of product from 2 hour treatment to 4 hour treatment. In 2006, the Party has requested a decreased amount of MB compared to 2005 as a result of the planned switch to less permeable films for use in tarp fumigations. In the future, the Party could significantly reduce its use of MB through the use of phosphine releasing formulations and/or irradiation, both of which are technically effective alternatives, if these are registered.
Spain	CUN2003/033, Esc6N1	Cut flowers (Cadiz/Sevilla) - protected	53		53		**42**	MBTOC recommends a reduced CUE of 42 tonnes for 2006 for this use. This CUN is not significantly different from the one presented for 2005 and approved by the EMOP. MBTOC recognises several alternatives for production of various species of cut flowers, including 1,3-D (where registered) and substrates. The CUN has been reduced by 20% to allow for orderly phasein of alternatives. This recommendation was reevaluated at the request of the Party.
Spain	CUN2003/034, Esc6N2	Cut flowers (Cataluña) - carnation, protected and open field	20		18.6		**15**	MBTOC recommends a reduced CUE of 15 tonnes for 2006 for this use. This CUN is not significantly different from the one presented for 2005 and approved by the EMOP. MBTOC recognizes the substantial reduction of MB use from high historical levels and also of emissions by adoption of MB/Pic mixtures (e.g. 50:50), low rates (240 kgMB/ha) with VIF films and biannual application of MB, strip treatment. Research conducted by the Party has identified alternatives that are economically and technically feasible. MBTOC recognises several alternatives for production of various species of cut flowers. The CUN has been reduced by 20% to allow for orderly phase-in of alternatives. This recommendation was reevaluated at the request of the Party.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
Spain	CUN2003/036, Esc6N3	Peppers - protected	200		155		**155**	MBTOC recommends a CUE of 155 tonnes for 2006 for this use. MBTOC notes the 25 % reduction in use over one year, associated with change in MB/Pic formulation used. The CUN identifies technically feasible alternatives for peppers, but that some of these alternatives are not registered or are not technically feasible. Rotation is not feasible because of long cycle and monoculture. Solarisation with or without biofumigation is not efficient in the control of nematodes. The use of resistant varieties and rootstocks is limited by availability, lack of specialised nurseries, race occurrence and other factors. The use of resistant varieties needs to be combined other measures such as 1,3-D/Pic. 1,3-D/ Pic is registered (2002), but needs time to be adapted for local use.
Spain	CUN2003/035, Esc6N4	Strawberry fruit - protected	556		499.29		**499.29**	MBTOC recommends a CUE of 499.29 tonnes for 2006 for this use. The combination of 1,3-D/pic has been proven effective in long-term trials and has been commercially available in Spain for several years, but doubts are expressed in the CUN as to its continued registration. Substrates are used in a small proportion of strawberry production in Huelva (López-Medina, 2002). The CUN in 2003 for this use noted the difficulties of adopting alternatives for this use in some growing regions with heavier soil types. A reduction in use is apparent for 2006 compared with the nomination for 2005.
Spain	CUN2003/032, Esc6N5	Strawberry runners	230		230		**230**	MBTOC recommends a CUE of 230 tonnes for 2006 be approved for this use. The CUN is based on the use of VIF films and a maximum dosage rate of 200 kgMB/ha in sandy and heavy soils. Alternatives have not demonstrated consistent and full spectrum pest control to meet nursery certification standards, especially in difficult growing conditions of high elevation nurseries in Spain. The Party experienced reduced yields of 15% with a key alternative (1,3-D/Pic) in a recent, local trial. The Party may wish to evaluate the feasibility of changes to their production system (e.g. substrates, suspended pots) that are being examined in other Parties for this use.
Switzerland	Sw56N1	Mills and Processors		8.7	7.0	**8.7**	**7.0**	MBTOC recommends a CUE of 8.7 tonnes for 2005 and of 7.0 tonnes for 2006 be approved for this use. An alternative fumigant, SF, has recently become registered for emptied flour mills in Switzerland. MBTOC has information from the registrant that the food tolerance issue raised in the nomination will not prohibit the fumigation of flour mills. Another alternative fumigant, HCN, is registered for use and a variety of IPM practices have proved effective elsewhere to reduce or eliminate the need for MB in similar situations. The Party had significantly reduced their request to below historical use levels to account for scale up adoption to alternatives. There appears to be further scope for orderly implementation of alternatives.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
UK	UK5-N1	Mills and Processors (biscuits)		2.525		**2.525**		MBTOC recommends a CUE of 2.525 tonnes for this use. The applicant has tried the most promising alternatives like heat and phosphine without convincing success. Parts of the premises (< 10,000m³) may be suitable for heat application. Investigations should continue with the aim of improving application technology of alternatives such as heat and IPM systems.
UK	CUN2003/039, UKc6N6	Ornamental tree nurseries	6		6		**6**	MBTOC recommends a CUE of 6 tonnes for 2006 for this use. There have been no significant changes in the request from that which was approved by EMOP in March 2004. MBTOC recognizes the importance of clean propagative material, but seeks evidence that alternatives do not provide a sufficiently disease-free material to meet commercial standards of performance. This requires either comparative data on lack of disease tolerance provided by alternatives or grow-on trials demonstrating differences in performance of planting material.
UK	UK5-N2	Spices (building, Newly Weds Foods)		1.8		**1.8**		MBTOC recommends a CUE of 1.8 tonnes for 2005 be approved for this use. The applicant has tried the most promising alternatives, heat and phosphine, without convincing success. There is reference to several UK research programmes which agree on SF being the most promising, but unregistered, alternative at this time. MBTOC suggests that IPM practices be used where possible to reduce emissions of MB . Investigations should continue with the aim of improving application technology of alternatives such as heat and IPM systems.
UK	UK5-N4	Spices and pappadums		0.035		**0.035**		MBTOC recommends a CUE of 35 kg for 2005 be approved for this use. MBTOC suggests that IPM practices be used where possible to reduce emissions of MB.
UK	UK5-N3	Spices (building, Pataks)		1.2		**1.2**		MBTOC recommends a CUE of 1.2 tonnes for 2005 be approved for this use. The applicant has tried the most promising alternatives, heat and phosphine, without convincing success. There is reference to several UK research programmes which agree on SF being the most promising, but unregistered, alternative at this time. MBTOC suggests that IPM practices be used where possible to reduce emissions of MB . Investigations should continue with the aim of improving application technology of alternatives such as heat and IPM systems.
UK	CUN2003/040, UKc6N7(a)	Strawberry - fruit	68		63.6		**54.5**	MBTOC recommends a reduced CUN of 54.5 tonnes for 2006 for this use. The reduction is suggested to reduce the average dosage rate from 525 kg/ha to 450 kg/ha, MBTOC guideline rate for cold, heavy soils. Some key chemical alternatives are available (e.g. Pic alone or used sequentially with 1,3-D, and substrates) although key combinations are not registered in the UK. The Party demonstrates that they are having difficulties achieving effective disease control (Phytophtora) using key alternatives perhaps due to low soil temperatures. Further the Party contends that use of alternatives in these soils results in significant plantback delay (6 weeks). The Party states time is required to validate economic issues and resolve effective plant back times for chemical alternatives. 21% of the area planted annually is nominated for treatment.

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UK	CUN2003/040, UKc6N7(b)	Raspberry nurseries			4.4		**4.4**	MBTOC recommends a CUE of 4.4 tonnes for 2006 for this use. Proven technical alternatives are not registered for this use, particularly chloropicrin, and local legislation prevents the use of mixtures of fumigants unless specifically registered The Party has nominated MB on 15% of the crop where pest pressure is very high.
UK	UK5-N5	Woven baskets		0.77		**0.77**		MBTOC recommends a CUE of 770 kg in 2005 be approved for this use. Fumigations are carried out, mostly in container with some sheet fumigation, against non-quarantine pests that are unacceptable to buyers. Fumigations should continue to be carried out to best practice in reducing emissions and IPM practices should be adopted to reduce use of MB where possible. It appears that irradiation could be used as an alternative to MB for those consignments that contained materials corroded by phosphine. Phosphine fumigation is likely to be an alternative in cases where consignments do not include brass, copper or silver components.
USA	CUN2003/049, USc6N2	Cucurbits - field	1,187.77		*747.839*		**747.839**	MBTOC recommends a CUE of 747.839 tonnes for 2006 be approved for this use.This is based on the technical grounds that no alternatives are available for moderate to severe pest pressure (*Phytophthora* and nutsedge) in certain areas and that certain soils, weather and regulatory issues prevent the use of possible alternativesin other atreas in the nomination. If this use continues to be nominated it would be useful to discuss effectiveness of grafting and and whether VIF use could lead to further reduction in MB use. There is scope for reduction in this nomination by reduction in dosages of methyl bromide to standard rates. Nominations for melon, cucumber and squash should not be aggregated. MBTOC notes that this nomination could be dramatically reduced if an effective strategy or herbicide was available to control moderated to heavy nutsedge infestations. MBTOC recommends generating and validating information for methyl iodide against nutsedge under the specific pest and weather conditions of the nomination. MBTOC acknowledges the reduction in amount requested by the Party from previous nomination.
USA	CUN2003/048, USc6N1	Dried fruit and nuts		2.413	*80.649*	**2.413**	**80.649**	MBTOC recommends a CUE of an additional 2.413 tonnes for 2005 and of 80.649 tonnes for 2006 be approved for this use. The CUN for additional tonnage in 2005 refers specifically to rapid treatment of dates. This CUN is related only to rapid treatments required at peak harvest periods, where alternatives are not available. MB has been replaced by phosphine in several areas where time constraints permit. There may be scope for reduction of this use as the industry adopts the recently approved alternative of sulfuryl fluoride and food residue approvals are obtained in key markets. The quantity nominated is substantially greater than historical usage.

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USA	US56N10 (part)	Dry commodities/ structures (cocao beans)		*61.519*	*61.519*	**55.367**	**46.139**	MBTOC recommends reduced CUEs of 55.367 tonnes in 2005 and 46.139 tonnes in 2006 for this use (cocao beans in store). There is no MB CUE for this purpose from any other Party. Phosphine fumigation on-shore and in transit is typically used to control and manage infestation in unprocessed cacao beans together with other normal postharvest practices. Frequent fumigations indicate there are poor or no measures to prevent re-infestation, resulting in additional and perhaps unnecessary use of MB. The circumstances in the US may be somewhat different than in other countries. US regulations have no tolerance for pests in raw cocao as it is considered a finished food product. Reductions of 10% in 2005 and a further 15% in 2006 are suggested for the CUN for phasein of alternatives.
USA	US56N10(part)	Dry commodities/ structures (processed foods, herbs and spices, dried milk and cheese processing facilities)		*83.344*	*83.344*	**62.924**	**56.253**	MBTOC recommends reduced CUEs of 62.924 tonnes for 2005 and of 56.253 tonnes for 2006, being for the following uses: processed dry foodstuffs and associated premises (53.916 and 47.925 tonnes), herb and spice processing facilities (3.521 and 3.130 tonnes), miscellaneous other dry goods processing facilities (2.611 and 2.321 tonnes), cheese processing facilities (2.876 and 2.876 tonnes). MBTOC did not recommend the portion of this CUN for dried milk, for which there are other recognised measures including phosphine fumigation and cold storage. MBTOC did not recognise any current registered alternatives for cheese processing facilities and notes that mite pests of cheese are generally difficult to control. There may be scope for reduction in MB usage through better sealing of facilities to reduce dosage rates and frequency of fumigation. The other nominations in this CUN were reduced by 10%, consistant with the CUE for US mills and processing facilities already agreed for 2005 by the Parties, to allow progressive adoption of fumigant alternatives such as sulphuryl fluoride, continuing adoption of heat technologies, improved sealing of buildings, and increased optimisation of IPM techniques. An additional adjustment was made to reduce the calculation dosage from 24 to MBTOC guideline maximum level of 20 g m-3, consistant with good fumigation practice and emission control through sealing. A suggested further reduction of 10% of initial CUN, again with adjustment for dosage, is suggested for the 2006 nomination for further adoption of alternatives and improved sealing.

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USA	CUN2003/050, USc6N3	Eggplant - field	73.56	3.161	*101.245*	**3.161**	**80.312**	MBTOC recommends an additional CUE of 3.161 tonnes for 2005 and a reduced CUE of 80.312 tonnes for 2006 for this use. This CUN is related to production in three areas, Michigan, Georgia and Florida with recommended subtotals of 3.161, 18.908 and 57.454 tonnes respectively. In Michigan, the key pest on eggplant is Phytophthora capsici. Elsewhere this pathogen can be controlled by Pic, other fungicides and resistant varieties, but these have not been demonstrated to be sucessful under local cool conditions. In Georgia production areas, MB is regarded by the Party as the only feasible control measure for heavy nutgrass infestations. In Florida, some areas are subject to heavy nutgrass infestation and others have karst topography on which 1,3-D based fumigants are not permitted. The total growing area for Florida was about 15% less in 2006 than 2005, resulting in a decreased unadjusted CUN component for this area. The nominated quantities for Florida and Georgia for non-karst areas, after adjustment, have been reduced by a suggested 20% to account for phasein of alternatives including increased use of 1,3-D/Pic, where permitted, improvements and use of metham sodium with or without Pic, reduced frequency of treatment with MB coupled with use of other measures, including including metham sodium or herbicide use (halosulfuron) for management of nutgrass. A further adjustment was applied to reduce the dosage to the guideline level of 200 kg/ha under the strips. There is scope for both improving effectiveness of alternatives (e.g. Fennimore et al. 2003, Gilreath et al. 2003) and reducing MB use by adoption of very low permeability strips e.g. VIF. The Party identified a number of technically feasible alternatives. By 2007, it is expected that there will be a significant adoption of these alternatives.
USA	CUN2003/052, USc6N5	Forest nursery seedlings	192.512		157.694		**157.694**	MBTOC recommends that a CUE of 157.694 tonnes for 2006 be approved for this use. MBTOC recognizes a number of alternatives for this use, including 1,3-D, containerisation and steaming. The CUN states that available alternatives have not yet been found to be feasible technically or economically in certain specific circumstances. The Party has reduced the amount requested for 2006 by 27% compared with that for 2005. The recommended amount is consistent with a rate of 200 kgMB/ha.

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USA	CUN2003/051, USc6N4	Mills and Processors	483		505.982		**394.843**	MBTOC recommends a reduced CUE of 394.843 tonnes for 2006 in total, being for certain rice mills (73.745 tonnes), bakery uses (14.742 tonnes), dry pet food processing premises (43.273 tonnes), and some flour mills (263.083 tonnes). The component of the CUN relating to certain rice mills has been scaled to the MBTOC guideline dosage of 20 g/m3 from the 31 g/m3 in the nomination. Improved emission control through improved sealing of the rice mills will allow reduction of the dosage rate to commonly used levels. In addition, the Party indicated a frequency of fumigation of 5x per year, but this frequency could be reduced if mills were better sealed, and could therefore contribute to the suggested reduction of MB use. MBTOC notes that, in general, there are alternatives for pest control in rice mills but accepts that they may not be feasible under the particular circumstances of these mills. There are particular difficulties relating to use of full-site treatments alternatives in bakery premises that may lead to a requirement for MB treatment (e.g. heat treatment and phosphine) unsuitable for some components, sulphuryl fluoride is not registered). Components of this CUN relating to pet food processing areas and flour mills were reduced by 10%, consistant with the CUE for US mills and processing facilities already agreed for 2005 by the Parties, to allow progressive adoption of fumigant alternatives such as sulphuryl fluoride (recently registered for flour mills), continuing adoption of heat technologies, improved sealing of buildings, and increased optimisation of IPM techniques. MBTOC comments that the pet food processing premises uses a dosage rate of MB consistent with good fumigation practice and frequency of fumigation is low, indicating use of IPM and other methods to reduce need for methyl bromide. MBTOC suggests an additional 10% reduction for 2006 to the component of the CUN for flour mills for the anticipated adoption of sulphuryl fluoride, continuing adoption of heat and phosphine technologies, improved sealing of buildings, and increased optimisation of IPM techniques. There were difficulties in assessing parts of this CUN because data or previous use of MB and the specific need for MB by site were not available.
USA	CUN2003/054, USc6N14	Nursery float trays for tobacco seedlings	0	*0*	*0*	**N**	**N**	MBTOC did not recommend this CUN for either 2005 or 2006 in the interim TEAP June 2004 report. The Party subsequently withdrew the CUN.

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USA	USc6N16	Nursery stock - fruit trees, raspberries, roses			64.528		**64.528**	MBTOC recommends that a CUE of 64.528 tonnes for 2006 be approved for this use. This CUN is not significantly different in technical content from the nomination approved by EMOP, but now includes rose propagation stock and is effectively 9% less than the nomination in 2005. This is essentially 3 separate nominations, for raspberry, fruit and nut tree stock and rose nursery stock. Several potential alternatives were found not to penetrate sufficently deeply in moderate to heavy textured soils for production of pest-free nursery stock to the standard needed for clean propagative material. For fruit and nut trees and rose stock,1,3-D/Pic use is restricted for regulatory reasons (township caps). Substantially different production systems are in use for nursery roses in some other countries, but adoption of these systems would entail significant changes to both process and product. There appears to be scope for reduction of MB dosage rates through use of VIF or barrier films where permitted.
USA	CUN2003/056, USc6N7	Orchard replant	706.2		*827.994*		**527.6**	MBTOC recommends a reduced CUE of 527.6 tonnes for 2006 be approved for this use. This recommendation includes 1.6 tonnes for research.Three alternatives,1,3-D alone and 1,3-D combined with chloropicrin or metham sodium, are available technical alternatives in the CUN for treatment in light soils. Soil moisture conditions and current labeled rates of 1,3-D are not sufficient for adequate control in fine textured soils. Regulatory issues (township caps) restrict the use of 1,3-D. The nomination states these soil and regulatory impacts occur in 37-58% of the applicant's original request. The quantity nominated has been adjusted by using the average of the sum of the Regulatory Issues and Unsuitable Soils BUNI adjustment factors, after allowance for the nominated research quantity. MBTOC recognizes that perennial crop replant disease is a problem for which alternatives to MB are generally not adequately proven. The main constraint to the adoption of alternatives is the inability to identify definitively what is causing replant disease and implement appropriate response. MBTOC recognises that the industry is aware of technically feasible and available alternatives and use of VIF for emission reduction.

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USA	US56N8	Ornamentals		*210.949*	*162.817*	**154**	**U**	MBTOC recommends a reduced CUE of 154 tonnes for 2005 for these uses and is unable to assess this CUN for 2006. The CUN has been recalculated by the Party. It was formerly 183.342 and 230.856 tonnes for 2005 and 2006 respectively. Both the original CUN and supplemental information provided by the Party lacks information about specific crops and circumstances. To allow detailed evaluation of this complex nomination, it needs to disaggregated by growing region and listed by major flower crop. The Party states that this information is not available at this time. Two growing regions are involved in this CUN: California and Florida. MBTOC recognises that only 6.3% of the flower industry in California is treated annually, adoption of 1,3-D is impacted by regulatory constraints in some areas and that MB dosage rates used are within MBTOC guidelines. Transition to alternatives such as dazomet, steam and substrate culture may not be feasible for the particular flower crops still using MB. In Florida, the main use is for elimination of residue from previous caladium crops. In heavy soils with high organic matter component there may be no tested alternative for this unique problem. The rates of MB used are high even though MB/Pic mixtures are sometimes used. There appears scope for substantial reduction through use of barrier films in Florida coupled with reduced MB rates where alternatives are not feasible. In order to make an evaluation for 2005, it was assumed, as advised by the Party, that about one-third of the tonnage was used in California and was recommended without adjustment (i.e. 70 tonnes). The remainder is used in Florida. With adoption of 67:33/MB:Pic, the dosage rate of MB can be substantially reduced. A reduction of 40% is suggested for calculation purposes, giving a suggested CUE of 84 tonnes for this region and use..

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USA	CUN2003/058, USc6N9	Peppers - field	1085.3	9.482	*1,498.530*	**9.482**	**804.033**	MBTOC recommends an additional CUE of 9.482 tonnes for 2005 and a reduced CUE of 804.033 tonnes for 2006 for this use. This CUN related to production in five areas, Michigan, Georgia, Florida, SE US and California. with recommended subtotals of 9.482, 172.629, 525.151, 55.261 and 41.511 tonnes respectively. A new survey in Georgia showed a greater acreage with high nutgrass infestation than used in the calculations for 2005 CUN, resulting in an increased nomination without change in area or dosage. In Florida, some areas are subject to heavy nutgrass infestation and others have karst topography on which 1,3-D based fumigants are not permitted. The area affected by heavy nutgrass infestation and karst topography and consequent adjustments to the methyl bromide CUE sought was taken from the 2005 CUN for the purposes of calculation, as the new survey related to Georgia not Florida. The total growing area for Florida was about 6% less in 2006 than 2005, resulting in a decreased unadjusted CUN component for this area. In SE US, the calculations were based on only 25% of the crop area and no adjustments for nutgrass prevalence were made. In California, the CUN was restricted to 23% of the growing area that could not use the principal alternative, shank-injected 1,3-D/Pic, for regulatory reasons. In Michigan, the key pest on peppers is Phytophthora capsici. Elsewhere this pathogen can be controlled by Pic, other fungicides and resistant varieties, but these have not been demonstrated to be sucessful under local cool conditions. In Georgia production areas, MB is regarded by the Party as the only feasible control measure for heavy nutgrass infestations, but there several studies showing alternatives give similar performance.The nominated quantities, after adjustment, have been reduced for Georgia, Florida and SE US by a suggested 20% to account for phasein of available alternatives for non-karst areas including increased use of 1,3-D/Pic, where permitted, improvements and use of metham sodium with or without Pic, reduced frequency of treatment with MB coupled with use of other measures, including metham sodium or herbicide use for management of nutgrass and adoption of VIF technology. A further adjustment was applied to reduce the dosage to the guideline level of 200 kg/ha under the strips. The Party identified a number of technically feasible alternatives for some areas. By 2007, it is expected that there will be a significant adoption of these alternatives.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
USA	CUN2003/048, US56N6	Smokehouse Ham (building and product)	0.907	135.397	135.742	**67**	**U**	MBTOC recommends an additional CUE of 67 tonnes for 2005 for this use and is unable to assess the CUN for 2006. The suggested quantity represents a 50% reduction in the requested amount, including the CUE of 0.907 tonnes previously allocated. No alternative treatment is known to MBTOC for full site treatment of ham curing houses containing dry cured hams. According to information received by MBTOC from commercial sources, the recommended amount is likely close to recent historical use. No historical use data was supplied with the nomination. Information available to MBTOC indicates that infested hams cannot be sold, regardless of whether they are fumigated or not. MBTOC cannot assess this CUE for 2006 without details of location and volume of fumigation facilities, historical use data in those locations, an improved understanding of the availability of permitted alternatives, including by meat inspection regulations and further details of the critical need for MB in in this case.
USA	CUN2003/059	Strawberry fruit - California (reconsideration)	1225.935	316		**219**		MBTOC recommends an additional CUE of 219 tonnes, giving a total of 1445 tonnes, for 2005 be approved for this use. This is a component of the nomination for strawberry (fruit production) submitted in 2003 and referred back to MBTOC for further consideration. The Party recognises that alternatives are available for a proportion of the growing acreage, but that time is required for orderly transition to these alternatives. The Party submitted that only 1370 ha could reasonably be converted to alternatives in the time available. Adjustments made to the tonnage requested on the same basis as was used in the 2003 round (allowance for further use of MB/Pic 50:50).

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
USA	CUN2003/059, USc6N11	Strawberry fruit - field	1833.846		*1,918.400*		**1520.803**	MBTOC recommends a reduced CUE of 1520.803 tonnes in total for 2006 for this use. This CUN is related to production in three areas, Florida, eastern US and California. with recommended subtotals of 224.142, 134.476 and 1162.186 tonnes respectively. The nomination is based on the technical grounds that no alternatives are available for moderate to severe pest pressure for root rot (Phytophthora, etc.) and nutsedge in certain areas and that certain topographies and regulatory issues prevent the use of possible alternatives in several areas. In California, MBTOC considers alternatives are technically feasible for the spectrum of target pests, including Phytophthora, e.g. 1,3-D/Pic, but accept that its use alone or in combination is presently restricted because of regulatory issues. The nomination was based on the 1X township cap, but a greater availability is expected for 2006, possibly as much as the current 2X cap (e.g. see US nomination for 'Ornamentals'). MBTOC considers that other alternatives (see references in Porter, in press) are technically suitable for areas where regulatory issues affect the use of 1,3-D, but that some time may be required to commercially scale up these technologies. A suggested reduction of 20% of the California component of the nomination has been applied to account for this increased availability of alternatives, including any area areas where 1,3-D can be used at above the 1X township cap. Almost all the area for which drip applied 1,3-D/Pic is unsuitable lies within the 1X cap area and does not affect the nomination. For Florida, MBTOC acknowledges karst topography affects the area 1,3-D can be used but considers that other alternatives (Pic EC, metham + Pic), are technically suitable for these areas, although time is required for commercial scale up. In eastern US, with small farms, buffer zones affect availability of 1,3-D/Pic on 40% of potential use, but MBTOC considers alternatives available (eg. Pic formulations, metham + Pic), although time is required for commercial scale up. A suggested scaling has been applied to the Florida and eastern US components of the nomination to reduce the dosage under strips from an estimated 277.5 and 226.5 kgMB/ha respectively to MBTOC guideline dosages of 200 kgMB/ha. There may be scope for both improving effectiveness of alternatives (Fennimore et al. 2003, Gilreath et al. 2003) and reducing MB use by adoption of very low permeability strips e.g. VIF. Part of the suggested reduction may be acheived through adoption of alternatives.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
USA	CUN2003/060, USc6N12	Strawberry runners	54.988		56.291		**56.291**	MBTOC recommends a CUE of 56.291 tonnes for 2006 for this use. Strawberry runners under this CUN are produced to the same standards of disease freedom as other US production covered under QPS exemption. This recommendation is based on lack of proven alternatives for the particular situation. MBTOC recognises the need to produce planting stock of high health status to minimise spread of disease and pests, and minimise need for control measures in fruiting fields, possibly including MB fumigation. Technical data provided with the submission indicates that metham sodium and chloropicrin are providing effective disease control, but further trials are required to validate disease tolerances. The possible alternatives, 1,3-D/Pic or 1,3-D alone followed by metham sodium, are reported not to be effective, though no data is provided in the submission to support lack of effectiveness to the necessary depth. There is substantial production of runners as 'plug plants' elsewhere, a soilless system not requiring MB.
USA	US56N13	Tobacco - seedlings		*0*	*0*	**N**	**N**	MBTOC did not recommend this CUN in the interim TEAP June 2004 report. The Party subsequently withdrew the CUN.

Party	MBTOC reference number's	Industry	Approved quantity (metric tonnes) for 2005 by EMOP (a)	Nominated quantity for 2005 in 2004 round (a)	Nominated quantity for 2006 in 2004 round (a)	New or additional quantity recommended by TEAP/MBTOC for 2005	Quantity recommended by TEAP/MBTOC for 2006	Comments by MBTOC
USA	CUN2003/062, USc6N15	Tomato - field	2865.3	*10.746*	*2,844.985*	**10.746**	**2217.433**	MBTOC recommends an additional CUE of 10.746 tonnes for 2005 and a reduced CUE of 2217.433 tonnes for 2006 for this use. This CUN is related to production in three areas, Michigan, SE US and California. with recommended subtotals of 10.746, 2197.501and 9.185 tonnes respectively. In SE US, some areas are subject to heavy nutgrass infestation and others have karst topography on which 1,3-D based fumigants are not permitted. In California, the CUN was restricted a portion of the growing area with hilly terrain. While a preferred method of application of a particular alternative, 1,3-D/Pic applied through the drip system, can give uneven results under such circumstances, the alternative can be applied, as with MB, by injection. Up to 9% of the nomination cannot use this alternative for regulatory reasons (township caps). The component of the CUN has been reduced to apply only this area without allowance for scale up as almost all the industry in the area already uses non-MB systems. In Michigan, the key pest on peppers is Phytophthora capsici. Elsewhere this pathogen can be controlled by Pic, other fungicides and resistant varieties, but these have not been demonstrated to be sucessful under local cool conditions. The nominated quantities have been reduced for SE US, non-karst areas, by a suggested 20% to account for phasein of available alternatives including increased use of 1,3-D/Pic, improvements and use of metham sodium with or without Pic, reduced frequency of treatment with MB and use of other measures, including herbicide use for management of nutgrass. Dosage rates for the MB component of the fumigant mixture used, estimated 225kgMB/ha, exceed MBTOC guideline rates of 200kgMB/ha. The component of the nomination has been scaled to reduce the usage to guideline levels. There is scope for both improving effectiveness of alternatives and reducing MB use by adoption of very low permeability strips, e.g. VIF (e.g. Nelson and Renner, 2002, Motis and Locascio, 2002, Fennimore et al. 2003, Gilreath et al. 2003, Gilreath and Santos, 2004). The Party identified a number of potential technically feasible alternatives for some areas. By 2007, it is expected that there will be a significant adoption of these alternatives.
USA	CUN2003/063, USc6N17	Turfgrass	206.826		131.6		**131.6**	MBTOC recommends a CUE of 131.6 tonnes in 2006 be approved for this use. The Party has reduced the requested volume of MB by 40% from that approved by the EMOP in 2005. This quantity is to allow the industry further orderly transition to alternatives.

Footnotes

U Denotes a nomination evaluated as 'unable to assess'
(a) Italicised figures denote changed values by the nominating Party subsequent to June 2004 CUN interim report

Annex 2: Membership of the Methyl Bromide Technical Options Committee as at 1 October 2004.

TEAP Methyl Bromide Technical Options Committee (MBTOC)

Co-chairs	Affiliation	Country
Jonathan Banks	Consultant	Australia
Nahum Marban Mendoza	Universidad Autonoma Chapingo	Mexico

Members	Affiliation	Country
Alessandro Amadio	UNIDO	Italy
Marten Barel	Consultant	Netherlands
Chris Bell	Consultant	UK
Antonio Bello	Centro de Ciencias Medioambientales	Spain
Mohamed Besri	Institut Agronomique et Vétérinaire Hassan II	Morocco
Cao Aocheng	Chinese Academy of Agricultural Sciences	China
Fabio Chaverri	IRET-Universidad Nacional	Costa Rica
Ricardo Deang	Consultant	Philippines
Patrick Ducom	Ministère de l'Agriculture	France
Hodayah Finman	US Environmental Protection Agency	US
Volkmar Hasse	GTZ	Germany
Saad Hafez	University of Idaho	US
Rick Keigwin	US Environmental Protection Agency	US
George Lazarovits	Agriculture & Agri-food Canada	Canada
Michelle Marcotte	Marcotte Consulting Inc.	Canada
Cecilia Mercado	UNEP ROAP CAP	Philippines
Melanie Miller	Consultant	Belgium
Andrea Minuto	Agroinnova Universita Torino	Italy
Mitsusada Mizobuchi	MAFF	Japan
Mokhtarud-Din Bin Husain	Department of Agriculture	Malaysia
Kazufumi Nishi	Nat Institute of Vegetables and Tea Science	Japan
David Okioga	Ministry of Environment and Natural Resources	Kenya
Marta Pizano de Marquez	Consultant	Colombia
Ian Porter	Institute for Horticultural Development	Australia
Christoph Reichmuth	Ministry of Consumer Protection, Nutrition and Agriculture	Germany
John Sansone	SCC Products	US
Jim Schaub	US Department of Agriculture	US
Sally Schneider	US Department of Agriculture	US
Stappies (JL) Staphorst	ARC-Plant Protection Research Institute	South Africa
Akio Tateya	Japan Fumigation Technology Association	Japan
Robert Taylor	Natural Resources Institute - associate	UK
Alejandro Valeiro	National Institute for Agriculture Technology	Argentina
Ken Vick	U S Department of Agriculture	US
Nick Vink	University of Stellenbosch	South Africa
Chris Watson	IGROX Ltd	UK
Jim Wells	Environmental Solutions Group, LLC	US

Total Membership = 38

Article 5(1) Members = 12 (32%)