

**MONTREAL PROTOCOL
ON SUBSTANCES THAT DEplete
THE OZONE LAYER**



UNEP

**REPORT OF THE
TECHNOLOGY AND ECONOMIC ASSESSMENT PANEL**

MAY 2005

**CRITICAL USE NOMINATIONS – SECTION III OF ANNEX TO DECISION
XVI/2 AND FORMER ‘UNABLE TO ASSESS’**

FINAL REPORT

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On Substances that Deplete the Ozone Layer**

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UNEP Technology and Economic Assessment Panel

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1. Critical Use Nominations for Methyl Bromide

1.1 Introduction to MBTOC Evaluation of Critical Use Exemptions

1.1.1 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 qualify 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:

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 determine 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).

MBTOC/TEAP reviewed the CUNs in accordance Decision XVI/2(6) which reads:

6. *To ask the Methyl Bromide Technical Options Committee to review:*
 - (a) *Those portions of the 2006 critical-use nominations set forth in section III of the annex to the present decision;*
 - (b) *The 2006 critical-use nominations that were identified as “unable to assess” in the October 2004 report of the Technology and Economic Assessment Panel, on the basis of all relevant information submitted by 24 January 2005, including any supplemental information submitted by the Parties, and information relating to what is suitable for the crops and circumstances of the nomination;*

All reviews in 2005 are to be in accordance with the ‘Annex I’ referred to in Decision XVI/4. This annex also sets out the schedule for the annual review of critical-use nominations.

In addition to the criteria for the evaluation provided in Decision IX/6, the Parties have given further guidance for the review of CUNs in Annex 1 of 16 MOP meeting report. Inter alia, this requires that TEAP and MBTOC to provide a clear description of why any part of is not recommended, including references to the relevant studies used as the basis for such a decision. Para. 32 emphasizes that exemptions must fully comply with Decision IX/6 and other relevant decisions, and are intended to be limited to the levels needed for critical-use exemptions, being temporary derogations from the phase-out of methyl bromide in that they are to apply only until there are technically and economically feasible alternatives that otherwise meet the criteria in decision IX/6, and that MBTOC should take a precise and transparent approach to the application of the criteria, having regard, especially, to paragraphs 4 and 20 of Annex I.

Paragraphs 4 and 20 read:

4. *Although the burden of proof remains with the Party to justify a request for a critical-use exemption, MBTOC will provide in its report a clear explanation of its operation with respect to the process of making determinations for its recommendations, and clearly state the approach, assumptions and reasoning used in the evaluation of the critical-use nominations. When cuts or denials are proposed, the description should include citations and also indicate where alternatives are technically and economically feasible in circumstances similar to those in the nomination, as described in decision Ex.1/5, paragraph 8.*

20. *In line with paragraph 4 above, in any case in which a Party makes a nomination which relies on the economic criteria of decision IX/6, MBTOC should, in its report, explicitly state the central basis for the Party's economic argument and explicitly explain how it addressed that factor, and, in cases in which MBTOC recommends a cut; MBTOC should also provide an explanation of its economic feasibility.*

1.1.2 *Scope of this report*

In accordance with Decision XVI/2(6), this final report provides MBTOC/TEAP evaluations on:

- the reconsideration of the CUNs in Section III of Decision XVI/2,
- on the remaining 2006 CUNs that MBTOC had been previously categorized as 'unable to assess,'

1.1.3 *MBTOC and TEAP process for consideration of CUNs*

Some Parties submitted further information in support of nominations listed in Section III under paragraph 5 of Decision XVI/2 to the Ozone Secretariat. MBTOC met 11-15 April 2005 in Buenos Aires, Argentina for its review. This meeting was held as required by the time schedule for considerations of CUNs given in Annex I of 16MOP meeting report.

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 CUN process. This was required to ensure 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 the 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. Drafts

arising from the subcommittees were considered in plenary where consensus decisions were made.

As part of internal process of MBTOC, check-list style evaluation forms were generated to allow the Committee to assess the large number of nominations efficiently and equitably. These evaluation forms include reference to the basis for the questions asked as part of the evaluation and specifically relevant sections of relevant guidance of the Parties, in particular, Decision IX/6. All nominations were treated similarly, independent of the size of the exemption requested. Specific circumstances of each nomination were taken into account.

The CUEs approved by 1ExMOP and 16MOP for 2005 use were the baseline data when considering CUNs for 2006, including those in the 'unable-to-assess' (in TEAP report of October 2004) and Section III categories, now being reassessed under Decision XVI/2.

1.2 Critical Use Nominations Review

In considering the CUNs, MBTOC applied the standards contained in Annex I of 16MOP. In particular MBTOC sought to provide consistent treatment of CUNs within and between Parties while at the same time taking local circumstances into consideration for specific crops and situations, and to provide transparency in its processes and conclusions.

1.2.1 Consideration of alternatives

In considering alternatives to methyl bromide, MBTOC used the guidance given in Annex I where 'Alternatives' were defined as any practice or treatment that can be used in place of methyl bromide. 'Existing alternatives' are those alternatives in present or past use in some regions; and 'potential alternatives' are those alternatives in the process of investigation or development. MBTOC also used information on the suitability of alternatives for a nomination by considering the commercial adoption of alternatives in regions nominating for CUNs. Also, adoption in regions with similar climatic zone and cropping practices was used as an indication of the feasibility (technical and economic) of an alternative in a particular region. For example, 1,3-D/Pic, metham alone or in combination with Pic, dazomet, substrates and the use of resistant varieties (for solanaceous crops, melons and cucurbits) have been adopted to replace MB for several crops and in several regions where MB was once used. MBTOC is 'unable to assess' nominations that do not explain why these major alternatives are unsuitable for the circumstances of a nomination.

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 a technically feasible alternative would provide disinfestation to a level that met the objectives of a MB treatment, e.g. meeting

infestation standards in finished product from a mill. Technically feasible alternatives do not necessarily provide superior pest control results than are achieved in practice by MB.

1.2.2 Period of nominations

All Section III nominations pertain to 2006.

1.2.3 Plans to develop, register and deploy alternatives

To qualify for a CUE, Decision IX/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 2005 round, as in previous rounds, plans to identify alternatives were often not adequate and future plans to phase out MB were not given. As with the 2004 round, MBTOC did not use lack of phaseout plans as a basis to ‘not recommend’ a nomination.

Decision Ex. I/4 requires 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 awaits these reports. In this round of nominations, some Parties identified alternatives and reduced their nominations to allow for phase-in of alternatives. MBTOC did not reduce a Party’s requested amount for phase-in of alternatives without technical and economic evaluation and suitable justification.

MB is a mature technology and a considerable knowledge base exists for its use. On the other hand, many alternatives need continued efforts for correct and efficacious use and adaptation to local commercial circumstances. This leads to difficulties in true comparison of the feasibility of alternatives as the newer alternatives and their application may not be fully developed, may not have achieved economies of scale, and may have fewer years of documented pest control success. Some latitude is needed in evaluating the feasibility of alternatives to take this problem into account.

1.2.4 Standard assumptions used in assessment of nominated quantities.

The tables below (Table 1, 2) are explicit statements of standard presumptions applied by MBTOC/TEAP in assessing this round of CUNs, and both the 2004 and 2005 round of CUNs, where continued methyl bromide use is sought. Previous statements of these presumptions have been given in TEAP reports of October 2003, June 2004 and October 2004.

The rates and practices adopted by MBTOC are, in general, conservative. For soil treatments, the dosage levels of methyl bromide given in these presumptions exceed that required in good agricultural practice in all but exceptional circumstances, particularly

when used in conjunction with low gas permeability barrier films, e.g. VIF or equivalent. To assist the adoption of lower dosage rates, researchers and extension specialists need to continue to build grower confidence in the effectiveness of lower dosage levels and optimise the methods for application of barrier films, VIF or equivalent, in the field. Proposed changes to these standard presumptions with supporting documentation will be provided in a later report in conformity with Decision XVI/2 for consideration at 17MOP.

Table 1. Standard presumptions used in assessment of CUNs – soil treatments.

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

Table 2. Standard presumptions used in assessment of CUNs – post-harvest treatments

	Comment	CUN Adjustment	Exception
Dosage rate - structural	20g/m ³	Nominations using higher dosage rates were reduced proportionally	Where approved label rates require higher dosage rate or where substantiated by the Party
Dosage rate - commodities	EPPO standard as reproduced in MBTOC (1994, 1998)	Nominations using higher dosage rates were reduced proportionally	Where approved label rates require higher dosage rates or where substantiated by the Party

1.2.5 Adjustments for standard dosage rates.

MBTOC assessed CUNs for appropriate MB application rates and deployment of MB emission reduction technologies, such as use of low permeability barrier films or appropriate sealing techniques.

Decision IX/6 requires 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’. One key transitional strategy has been the adoption of MB:Pic formulations with lower concentrations of methyl bromide (e.g. MB:Pic 50:50 or less). These formulations are considered to be equally as effective in controlling soilborne pathogens as formulations containing higher quantities of methyl bromide (e.g. 98:2, 67:33). These formulations have been adopted widely by non-Article 5 countries to meet Montreal Protocol restrictions where such formulations are registered or otherwise permitted. Their use can be achieved with application machinery which allows co-injection of methyl bromide and chloropicrin or by use of premixed formulations.

In the soils sector, some CUNs still involve the use of MB with low or high density polyethylene sheeting (tarping). This process is known to lead to high rates of emission of MB in the absence of specific measures such as deep injection. MB use and emission rates can be reduced substantially through use of less pervious tarping (MBTOC, 2002), such as barrier films, Virtually Impermeable Film (VIF) or equivalent, allows increased retention of MB, extended effective exposure periods for the pests, and reduced MB application rates compared with use of conventional sheeting. It has been long recognised that the use of low permeability barrier films coupled with reduced dosages effectively reduces methyl bromide emissions (e.g. Wang et al. 1997). The use of low permeability barrier films (VIF or equivalent) has been mandated in the EU since 2000 and is in routine use in many countries.

In 2003 (TEAP 2003), MBTOC/TEAP evaluations of CUNs used conservative maximum allowable dosage rates for use with standard films and barrier films (VIF or equivalent). Since then, high levels of success have been demonstrated in many countries at lower rates of methyl bromide with barrier films. For this reason, new guidelines for reduced effective dosage rates with barrier films and standard films will be proposed in the September 2005 TEAP report for consideration by the Parties at the 17MOP, as required by the Decision XIV/2.

As in the evaluations of the 2003 and 2004 nomination round, MBTOC reduced quantities of MB in particular nominations to a standard rate and expected that barrier films (VIF or barrier films) would be used to retain gas effectively and allow extended exposures. MBTOC considers the maximum MB application rate, for 100% MB and 98:2 MB:Pic, of either 350 kg/ha (warm sandy soils) or 450 kg/ha (heavier cool soils), in conjunction with barrier films, 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) were feasible, maximum guideline dosage rates of 200 kg MB per treated hectare were regarded as acceptable.

The indicative rates used by MBTOC were maximum 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 barrier films where feasible. Reductions were not made if the Party provided a substantive argument otherwise (e.g. unusually tolerant pests) or where there were regulatory requirements to use specific rates.

As noted in TEAP (2004), use of 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 barrier films is restricted. Most of the problems with use of these films described in the 2002 MBTOC Assessment Report have now been overcome. In those few applications where broadacre or 'flat fume' coverage is required (nematode control in covered floriculture, for example), obtaining an effective glue and/or method for seam sealing may be difficult and require further work or trials to determine acceptable materials under some particular conditions.

In structures, it is feasible to reduce MB use and emissions by the use of improved sealing techniques, monitoring to ensure only the effective dose is used, and longer exposure periods. The average dosage rates now quoted in the CUNs, typically around 20 g/m³ for mills and similar structures, are reasonable.

In commodities, methyl bromide dosage rates vary with commodity temperature and by commodity sorption rates. Accordingly, MBTOC uses the dosage rates published by the European Plant Protection Organization (EPPO) and found in annexes to the MBTOC Assessment Reports published in 1994 and 1998. Parties are encouraged to use the lowest possible dosage rate appropriate for the circumstances and as allowed by the label.

1.2.6 Rate of adoption of alternatives

MBTOC recognizes that time is needed to effect phase-in of alternatives and accepts this as a reasonable technical argument for lack of availability to the end user sensu Decision IX/6.

Some CUNs in the 2005 round argued that time was required to allow the relevant industry to transition to available alternatives. Some CUNs showed a reduction in nominated quantity requested from that of the preceding year, reflecting progressive adoption of alternatives; while others had the same or similar quantities of MB nominated to the preceding CUNs. In some cases alternatives at varying stages of readiness for adoption were identified in the CUN and in others they were identified by MBTOC.

There is limited guidance and data available on what is a reasonable rate of transition to existing and available alternatives.

1.3 Outcome of evaluations of Section III and former ‘Unable to assess’ CUNs

MBTOC reassessed the 36 CUNs placed in Section III of Annex to Decision XVI/2 and totalling 3045.028 metric tonnes. Often information was received by MBTOC to contribute to the reassessment. MBTOC reassessed these CUNs on the basis of the original application and further information provided, taking into account the pertinent decisions. A total of 1083.713 tonnes of the Section III quantities have been recommended.

Additionally, MBTOC reassessed 4 CUNs previously placed in “unable to assess” category, totalling 429.981 metric tonnes, and recommended 191.0 tonnes in total in this category.

Several of the reductions in the Section III quantities and the “unable to assess” category were made or agreed by the nominating Parties. No further submissions or further supporting data was received for 17 of the 36 Section III quantities.

Evaluations of each CUN, and of the nominations placed in Section III of Annex to Decision XVI/2 are given in detail in Annex 1 of this report.

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ANNEX I

Table 1. Evaluation of “unable to assess” category in TEAP October 2004 Report

Party	Industry	CUEs for 2005 for this use (1ExMOP, 16MOP)	CUN for 2006 considered at 16MOP	Revised MBTOC recommendation for 2006	MBTOC evaluation	Basis of economic argument
Israel	Furniture - imported	1.422	1.422		N MBTOC does not recommend this nomination. It was noted in the original nomination in 2004 that the proposed MB use is against pests likely to be listed in future as quarantine pests, and that this use would then fall under the QPS exemption. No further information has been received from the Party to support this nomination for 2006.	n/a
Italy	Mills and Processors	160	130		U MBTOC is unable to assess this CUN. In a letter dated 26 January 2006, the Party (Italy) requests for deferment of the assessment of this CUN pending their submission of a comprehensive response to MBTOC questions. It is suggested that MBTOC reevaluate this nomination at its August 2005 meeting. The Party is requested to submit the supplemental information by 1 August 2005.	n/a
USA	Ornamentals	154	162.817	148.483	MBTOC recommends a reduced CUE of 148.483 tonnes for 2006 for this nomination, including 4.060 tonnes for associated research purposes. In calculating suggested adjustments to this nomination, MBTOC assumed that the quantity nominated for California (75.145 tonnes) in 2007 also applied in 2006, with the remainder split between karst topography (40%) and nonkarst areas (60%) of Florida. MBTOC recommends the requested quantity for all of the California portion of the nomination. This is on the grounds that 1,3-D containing mixtures are not available due to township caps and other alternatives are unsuitable. With regard to the Florida component of the nomination, it is suggested that the usage on karst (33.445 tonnes) be scaled to MBTOC guideline rates for MB:Pic 67:33 of 200kg/ha from 350 kg/ha, giving 19.111 tonnes, and all of that part of the Florida nomination that is not affected by karst topography, but uses an exceptionally high rate due to high organic matter soils be maintained as nominated (50.167 tonnes), in view of lack of tested alternatives and likely high reactivity of these soils..	Analysis shows reduced plant yields result in decreases in net revenues if next best alternatives are used.

Party	Industry	CUEs for 2005 for this use (1ExMOP, 16MOP)	CUN for 2006 considered at 16MOP	Revised MBTOC recommendation for 2006	MBTOC evaluation	Basis of economic argument
USA	Dry Cured Ham (building and product)	67.907	135.742	40.854	MBTOC recommends a critical use exemption of 40.854 tonnes in 2006 for this use. The quantity recommended is the full request as revised by the Party and it corresponds to a reduction to less than one third of the initial nomination. Historical use data for this specialised use is not available. There are no alternative treatments registered for this use. MBTOC has concerns over the lack of emission controls in this use. The Party is requested to gather 2005 use data to support any further nominations. On the basis of informal data gathered from MB distributors, MBTOC believes that the quantities approved for 2005, plus this recommendation, would result in a substantial excess of MB over requirements during this period. MBTOC has not identified any alternatives for this specific and specialised use, where fumigations are conducted in the presence of curing hams.	n/a

Footnotes:

N Denotes a nomination evaluated as 'not recommended'

U Denotes a nomination evaluated as 'unable to assess'

n/a The Party provided no information regarding economic feasibility or explicitly stated that lack of economic feasibility was not the basis for the CUN.

Table 2. Evaluation of the nominations contained in Section III of Annex to Decision XVI/2.

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
Australia	CUN2003/003, Auc6N2	Cut flowers, bulbs – protected	7	5.25	1.75	1.75	MBTOC recommends a CUE of 1.75 tonnes for the Section III component this CUN for 2006 use. The initial assessment by MBTOC reduced the whole nomination to account for a rate reduction (600 to 450 kg/ha) associated with the use of barrier film, which MBTOC considers an important practice to reduce emissions. Rate reduction with barrier film is widely used and documented in many countries in the world and its use is mandatory in the European Union since 2000. Reduced rates of 200 – 450 kg/ha are effective in most soil types (the higher rates being used for heavy soils) (Navas Becerra et al, 2000; Reuven et al, 2000; Gullino et al, 2003). MBTOC recommended dosages on the higher range (450 kg/ha) on account of heavy soils present in Australia. The Party has indicated that deployment of barrier film technology requires further time in these particular circumstances.	n/a
Australia	CUN2003/004,6, Auc6N6	Rice (consumer packs)	6.15	6.15	6.15	N	MBTOC does not recommend a CUE for the Section III component of this CUN. MBTOC based its review, as previously, on the basis of standard dosage rates of 24 g/m ³ as compared to the party's request of 48 g/m ³ . The Party has accepted the reduction pending results of current tests. The Party's tests with phosphine in current storage structures were only partly successful and further work is needed. Phosphine and other methods to disinfest rice are technically available. Since 2ExMOP is being held in June 2005, MBTOC will be unable to reevaluate any new information provided by the party before the ExMOP meeting date. However, according to research (Bell, 1976) on the tolerance of immature stages of four stored products moths to MB, insect eggs are more susceptible to methyl bromide than other life stages, therefore there is no need for a higher than normal dosage of MB to ensure control of eggs, the target stage under this CUN.	n/a

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
Australia	CUN2003/006, Auc6N3	Strawberry runners	35.75	30	7.5	7.5	MBTOC recommends a CUE of 7.5 tonnes for the Section III component of this CUN for 2006. The initial assessment by MBTOC reduced the whole nomination to account for a rate reduction associated with the use of VIF, which MBTOC considers an important practice to reduce emissions. VIF use is mandatory in the European Union since 2000 and reduced rates of 200 – 450 kg/ha give satisfactory results in most soil types (the higher rates being used for heavy soils) (Lopez Aranda et al. 2004). The Party however has validated that cold temperatures and high winds have affected sealing of VIF films and the Party needs more time to test new technologies and develop sealing systems for VIF sheets under the particular prevailing climatic conditions for this CUN.	
Canada	Cac6N2	Pasta manufacturing facilities	(a)	8.4	2.057	2.057	MBTOC recommends a CUE of 2.057 tonnes for the Section III component of this CUN for 2006. MBTOC reviewed the Party's request for reconsideration and understood that in 2005 the pasta manufacturers had underestimated their MB requirements in error. Canada did not allow the amount requested to be raised for 2006 despite the error. The Party indicated the amount requested would be the minimum amount required for the manufacturers to operate in 2006. The Party has also indicated that the pasta manufacturers have undertaken efforts to implement IPM and heat in their plants, that SF is not registered in Canada, and that MB alternatives need further development for their particular situation.	Party identified losses arising from prolonged interruption of plant operations (downtime) and noted costs of capital investment.
Canada	Cac6N1	Flour mills	47	27.8	6.974	6.974	MBTOC recommends a CUE of 6.974 tonnes for the Section III component of this CUN for 2006. MBTOC reviewed the Party's request for reconsideration of the 20 percent reduction in nominated quantity for phase in of alternatives. The Party indicated their originally requested amount was the minimum amount required by the flour millers in the absence of well developed alternatives. Considerable research into the technical efficacy of heat treatment in mills in Canada and detailed economic assessment of potential alternatives, including full scale commercial trials, has been submitted to MBTOC. IPM improvements continue to be trialed.	Heat treatment costs twice as much as MB, not including high investment costs. Party identified losses arising from prolonged interruption of plant operations (downtime) and noted costs of capital investment.

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
France	CUN2003/016, Frc6N8	Cut flowers, bulbs – protected and open field	60	52	8.25	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. In the original nomination, 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 states that time will be required for commercial scale up. The Party did not submit additional information.	Cost of alternatives is less but results in yield losses. Soiless culture requires high investment costs.
France	Frc6N3	Eggplant	(b)	22	5.5	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. MBTOC previously reduced this application by 5.5 tonnes, based on the conclusion that alternatives (e.g. soiless culture, resistant rootstocks, grafting) are available that are in widespread use in the Mediterranean region. They are in an early stage of adoption by French growers. MBTOC again considers that this reduction is reasonable given the wide availability and adoption of alternatives in the region. The Party did not submit additional information.	Cost of alternatives is less but results in yield losses.
France	Frc6N7	Melon	7.5	6	4.0	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. For 2006, MBTOC reduced this application by 1.5 tonnes because numerous alternatives are available and are being increasingly adopted in France. Initially, reductions suggested by MBTOC were 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. MBTOC revaluated the submission and consider that this reduction is reasonable given the wide adoption of alternatives in the region. The Party did not submit additional information.	Cost of alternatives is less but results in yield losses.
France	CUN2003/012, Frc6N14	Mills and Processors	40	35	5	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. The reduction of the original CUN was to the historical average level of usage and recognised that some savings in methyl bromide can be made through reduced dosages combined with better sealing techniques. No further information was received from the Party.	Heat treatment costs twice as much and there were still surviving pests.

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
France	Frc6N12	Tomato	125 (b)	48.4	12.1		N MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. MBTOC reduced the original CUN by 12.1tonnes for 2006 based on the conclusion that numerous alternatives are available and are being increasingly adopted in France. MBTOC revaluated the submission and consider that this reduction is reasonable given the wide adoption of alternatives for tomato in the region. The Party did not submit additional information.	Alternatives resulted in high yield losses and revenue losses of about 60%
Israel	CUN2003/022, Is56N3	Cut flowers – protected	303	240	63		N MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. This is on the basis that alternative cultural practices such as soilless culture can be phased in to reduce MB use as elsewhere. The Party accepted MBTOC's recommendation for quantity of MB and did not submit additional information.	Available chemical alternatives result in lower yields and significantly smaller revenues. Party notes soilless systems and steam are not cost effective
Israel	Is5-N1a	Dates (postharvest)	3.444	2.755	0.689		N MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. The Party accepted MBTOC's previous recommendation for quantity of MB and did not submit additional information.	Carbon dioxide increases costs by 2-10 times. Investment under investigation
Israel	CUN2003/022, Is56N4	Melon – protected & field	125.65	99.4	42.6		N MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. For 2006, MBTOC reduced the nomination to account for dosage rates for MB (98:2) (350kg/ha) considered effective by MBTOC for use under VIF on sandy soils. The Party accepted MBTOC's recommendation for quantity of MB and did not submit additional information.	Negative net revenue due to decreased yield relative to MB for next best alternative (metham sodium)
Israel	Is56N7	Seed production	56	28	22		N MBTOC does not recommend a CUE for the Section III component of the 2006 use. For 2006, MBTOC reduced the nomination to account for dosage rates for MB (98:2) (350kg/ha) considered effective by MBTOC for use under VIF on sandy soils. The Party accepted MBTOC's recommendation for quantity of MB and did not submit additional information.	n/a

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
Italy	It5-N4	Artifacts	5.225	5.225	0.275	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. This component relates to the treatment of moveable historical artifacts. MBTOC recognises the difficulty and risk of moving valuable artifacts. Most of the original CUN relates to objects that cannot be moved. There are alternative processes available for moveable artifacts, including heating, cooling and CA, as appropriate to the kind of artifact being treated. The Party submitted information indicating that although SF, a potential alternative for this situation, is newly registered, there has not been sufficient fumigators trained and licensed in its safe and effective use.	n/a
Italy	CUN2003/025, It-6N1	Cut flowers, bulbs – protected	250	187	63	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. For 2006, MBTOC reduced the nomination to account for dosage rates for MB (98:2) (350kg/ha or 450kg/ha) considered effective by MBTOC for use under VIF (Gullino et al, 2003). The Party did not submit additional information.	n/a
Italy	CUN2003/023, It-6N2	Eggplant – protected	194	156	44	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. For 2006, MBTOC reduced the nomination to account for dosage rates for MB (98:2) (350kg/ha) considered effective by MBTOC for use under VIF on sandy soils and the basis that alternatives were available on sandy soils (e.g. Pic EC and 1,3-D used alone, grafting, soilless cultivation). No further reduction for adoption of these alternatives was applied. The Party did not submit additional information.	n/a
Italy	CUN2003/024, It-6N3	Melon – protected	131	131	4	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. For 2006, MBTOC reduced the nomination to account for dosage rates for MB (98:2) (350kg/ha) considered effective by MBTOC for use under VIF on sandy soils. The Party did not submit additional information.	n/a
Italy	CUN2003/026, It-6N5	Pepper – protected	160	130	30	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. For 2006, MBTOC reduced the nomination to account for dosage rates for MB (98:2) (350kg/ha) considered effective by MBTOC for use under VIF on sandy soils. The Party did not submit additional information.	n/a

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
Italy	CUN2003/027, It-6N6	Strawberry fruit – protected	407	320	80	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. 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 considered further commercial adoption of these should be achievable. The Party did not submit additional information.	n/a
Italy	CUN2003/028, It-6N9	Tomato – protected	871	697	333	N	MBTOC does not recommend a CUE for the Section III component of the 2006 nomination. 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. MBTOC considered further commercial adoption of these should be achievable. The Party did not submit additional information.	n/a
Japan	J5-N6	Peppers (hot)	23.2	13.9	9.3	9.3	MBTOC recommends a CUE of 9.3 tonnes for the Section III component of the 2006 nomination. The nomination is based on the stated need to control a particular virus of peppers. Pepper mild mottle tobamovirus is transmitted by mechanical inoculation, grafting and contact between plants and by seeds, and can survive in crop 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. In the initial assessment, MBTOC considered transition time was required for adoption of alternatives e.g. crop rotation, sanitation, pathogen free seeds. As a result of new information submitted by the Party, MBTOC	n/a

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
							recognises the unique farming system used for peppers in Japan. MBTOC notes that the cultural practices adopted for pepper production in Japan result in need for MB for this virus and that no other country is using MB to control this virus. The Party is urged to demonstrate progress in developing strategies to eradicate the pathogen, particularly from the crop debris. VIF is being introduced. This can be expected to reduce MB need while alternatives and other control measures are trialled.	
Japan	CUN2003/029, J5-N4	Peppers (green)	164	98.4	65.6	65.6	MBTOC recommends a CUE of 65.6 tonnes for the Section III component of the 2006 nomination. The nomination is based on the stated need to control a particular virus of peppers. 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. In the initial assessment, MBTOC considered transition time was required for adoption of alternatives e.g. crop rotation, sanitation, pathogen free seeds. As a result of new information submitted by the Party, MBTOC recognises the unique farming system used for peppers in Japan. MBTOC notes that the cultural practices adopted for pepper production in Japan result in need for MB for this virus and that no other country is using MB to control this virus. The Party is urged to demonstrate progress in developing strategies to eradicate the pathogen, particularly from the crop debris. VIF is being introduced. This can be expected to reduce MB need while alternatives and other control measures are trialled.	n/a

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
New Zealand	NZ56N1	Strawberry fruit	42	34	8	N	MBTOC does not recommend a CUE for the Section III component of the 2006 use. Initially, MBTOC assessed that 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 effective for part of the nomination and MBTOC considers time is required for uptake of this alternative and improvement in application of MB mixtures associated with use of VIF or equivalent films. MBTOC received no further submission from the Party.	12% decrease in production with next best alternative reduces net revenue substantially.
New Zealand	NZ56N2	Strawberry runners	8	8	2	N	MBTOC does not recommend a CUE for the Section III component of the 2006 use. The nomination was initially reduced to conform with a guideline maximum dosage rate of MB of 200 kg/ha in MB/Pic mixtures (e.g. 67:33), preferably in conjunction the use of VIF or equivalent. MBTOC confirms its initial assessment. No further submissions were received from the Party on this CUN.	Decreased net revenue through a 10% decrease in yield and some other increased costs.
Spain	CUN2003/033, Esc6N1	Cut flowers (Cadiz/Sevilla) – protected	53	42	11	N	MBTOC does not recommend a CUE for the Section III component of the 2006 use. In its initial assessment, MBTOC recognised several alternatives. These include resistant varieties, 1,3-D and substrates for carnations. These are in use worldwide for the production of this flower and have proven suitable in Spain (Navas et al, 2000, 2002; Llauradó, 2000; Reuven et al 2002, 2005). MBTOC considered further commercial adoption of these was feasible. The Party did not submit additional information.	n/a
Spain	CUN2003/034, Esc6N2	Cut flowers (Cataluña) - carnation, protected and open field	20	15	4	N	MBTOC does not recommend a CUE for the Section III component of the 2006 use. In its initial assessment, MBTOC recognised several alternatives, including 1,3-D for carnations which make up a high proportion of this nomination and is presently registered for this use; this alternative has been identified as suitable in several countries including Spain (Navas et al, 2000, 2002; Llauradó, 2000; Reuven et al, 2002, 2005). Substrates are also suitable for production of various species of	No economic analysis of in kind alternatives. Party states that conversion to soilless systems is not feasible in the near term because

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
							cut flowers including carnations, in similar regions and circumstances (Marfà 2001; Grillas et al 2001). MBTOC considered further commercial adoption of these was feasible. The Party did not submit additional information.	of high costs.
UK	CUN2003/040, UKc6N7(a)	Strawberry - fruit	68(c)	54.5	9.1	N	MBTOC does not recommend a CUE for the Section III component of the 2006 use. The reduction is suggested to reduce the average dosage rate from 525 kg/ha to 450 kg/ha which is the MBTOC guideline rate for cold, heavy soils applied under VIF. The Party did not submit additional information.	Decrease in net revenue with next best alternative.
USA	US56N10 (part)	Dry commodities/ structures (cocoa beans)	61.519	46.139	15.38	9.228	MBTOC recommends a reduced CUE of 9.228 tonnes for the Section III component for this use in 2006. MBTOC's review of this issue was based on further information from the Party, on the most recent US import statistics for cocoa beans, and a recent case study (Marcotte and Sansone, 2005) of cocoa bean storage and logistics that indicated fumigation twice in a year was required. MBTOC's calculation allows for sufficient methyl bromide to treat the current volume of cocoa beans imported into the US twice, once on import and again prior to shipment to manufacturers, using dosage rates published by EPPO 1993 (MBTOC 2002, Annex 5.3). The total exemption recommended is the same as for 2005 as the Party did not adequately justify an increase and MBTOC was able to calculate a total MB requirement as described above. The Party is encouraged to apply the lowest dosage rate appropriate for the temperature of the product at time of treatment and consistent with US label rates. Although phosphine is used to disinfest cocoa beans in most countries, the Party indicates that present logistics do not accommodate its use in the US.	n/a

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
USA	US56N10(part)	Dry commodities/ structures (processed foods, herbs and spices, dried milk and cheese processing facilities)	83.344	56.253	27.091	12.865	MBTOC recommends a revised CUE of 12.865 tonnes for the Section III component for these uses in 2006. This revised Section III quantity is as requested by the Party following reconsideration of its nomination and revision of some components to a 20 g/m3 dosage rate. It is for specific situations where alternatives to MB are not economically or technically feasible in the following premises: processed dry foodstuffs and associated premises, herb and spice processing facilities, miscellaneous other dry goods processing facilities and cheese processing facilities. The component of the nomination for milk processing facilities has been withdrawn. The amount recommended allows the applicants time to continue their technical and economics evaluations and adoption of heat treatments, IPM improvements and other non-MB measures. Sulphuryl fluoride, a potential alternative, is not registered at this time for most of the uses covered by this nomination. The Party states that there are technical and economic difficulties with further deployment of heat and phosphine-based disinfestation processes for these particular uses. MBTOC is unaware of any technically effective treatment for cheese stores containing cheeses.	n/a
USA	CUN2003/050, USc6N3	Eggplant - field	76.721	81.253	20.933	0.914	MBTOC does not recommend a CUE for the Section III component of the 2006 use, excepting that nominated for research. The Party stated that it would not pursue the Section III component of this CUN as it submitted further information in support of the component outside the deadline for such material. The Party indicated it did not accept the reasons behind MBTOC's recommendations that reduced the initial nomination by the Section III quantity, and noted the relevance of this issue to its 2007 nomination for this sector. The research quantity (0.914 tonnes) was omitted in error from MBTOC recommendations to 16MOP and thus became part of the Section III quantity for this nomination. A corrigendum has been issued.	Economic analysis shows decreases in net revenues resulting from lower yields if next best alternatives are used. In Michigan, spring fumigation results in delayed production and missed market window leading to lower average price for crop.

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
USA	CUN2003/051, USc6N4	Mills and Processors	483	394.843	111.139	66.915	MBTOC recommends a revised CUE of 66.915 tonnes of the Section III component the 2006 CUN for these uses. The reduced quantity, requested by the Party, takes into account some adoption and proposed adoption of alternatives in this sector since the original nomination. The Party reduced dosage rates to MBTOC's standard and indicated that progress has been made in reducing frequency of fumigation in some rice mills through improved sealing. Where SF has been approved, millers and fumigators are working to optimize SF treatments to determine if pest control efficacy is comparable to MB and to evaluate the costs. SF, a promising alternative, is not registered at this time in California and New York. California is the site of several flour mills and comparatively high MB using rice mills. At this time the Party indicated technical efficacy and higher costs do not allow for further cuts for 2006. Additionally, the Party indicated that although new heat treatment methods and equipment are being commercialised, current results and treatment costs in larger mills do not allow for further cuts for 2006.	Decreases in net revenue for next best alternative substantial, resulting from delays in returning to production and increased costs, including capital costs of conversion.
USA	CUN2003/056, USc6N7	Orchard replant	706.176	527.6	300.4	N	MBTOC does not recommend a CUE for the Section III component of the 2006 use. Although accepting the amount for this use as approved at 16MOP under Section IIA, the Party stated that if it would revisit this issue should it become aware of data showing that there were no feasible alternatives for the particular circumstances of this nomination.	Some yield losses with next best alternatives.
USA	CUN2003/058, USc6N9	Peppers - field	1094.782	806.877	694.497	436.665	MBTOC recommends a reduced CUE of 436.665 tonnes of MB for the Section III component of the 2006 use, giving totals of 41.511 tonnes for California, 69.696 tonnes for SE US, 217.722 tonnes for Georgia, 902.308 tonnes for Florida, 9.482 tonnes for Michigan and 2.822 for associated research. Initially MBTOC made an assessment that alternatives were available for non-karst areas in Florida and Georgia and for all of the other southeast US. Additionally a dosage reduction under strips was made to conform to MBTOC standards. The adjustment was only for those areas where alternatives were not available and MB/Pic mixtures were being used. MBTOC based part of its previous assessment on the lack of information about nutgrass severity. However, after further submissions from the Party, MBTOC accepted the revised area of moderate to severe nutgrass in	Economic analysis shows decreases in net revenues resulting from lower yields if next best alternatives are used. In Michigan, spring fumigation results in delayed production and missed market window leading to lower average

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
							<p>Florida and thus the need for MB/Pic to control this key pest in this area, where 1,3-D could not be used. In Georgia production areas, MB/Pic is regarded by the Party as the control measure for heavy nutgrass infestations. Further information is sought on why key alternatives shown to be effective in research trials are considered unsuitable for both karst and non karst areas. This includes the increased use of 1,3-D/Pic with or without herbicides, and use of metham sodium with or without chloropicrin (Csinos et al 2002, Gilreath et al. 2003, 2005b,c), and use of other measures, including herbicides for management of nutgrass. An adjustment (*200/223) was used for dosages for Florida and the rest of SE US for fumigation under strip to conform with MBTOC guideline rates. Whilst MBTOC understands that nutgrass control may require higher MB rates with a MB/Pic mixture 67:33 under standard films, there appears to be scope for further substantial reduction in MB use in this area through increased proportions of Pic in MB/Pic mixtures and adoption of barrier film technology together with reduced MB dosages (Glireath et al., 2005a). In the previous assessment for California, the CUN was restricted to 23% of the growing area that could not use the principal alternative, 1,3-D/Pic, for regulatory reasons. For California, the key pests are nematodes and soilborne fungi. MBTOC maintains that effective alternatives are available for the coastal region of California, but adjusted the nomination for California to those areas where 1,3-D was not restricted by township caps. According to 2003 data available from the California Department of Pesticide Regulation, metham sodium is used on nearly as many acres as methyl bromide for peppers in California, indicating this is a viable alternative in areas affected by township caps, where another alternative, 1,3-D/Pic is not available. Economic analyses were not provided for this alternative for California.</p>	price for crop.

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
USA	CUN2003/059, USc6N11	Strawberry fruit - field	2052.846	1523.180	397.597	207.648	<p>MBTOC recommends a reduced CUE of 207.648 tonnes of MB the Section III component of the 2006 use, being 205.271 tonnes for California and 2.377 tonnes for associated research. The Party requested Section III tonnage on the basis that the efficacy of alternatives may not be comparable to MB in areas where pest pressure is moderate to severe; regulatory restrictions (township caps in California, karst geology in Florida, and buffer zones in southeastern states) that limit the use of 1,3-D; missed market windows in some areas due to delays in planting and harvesting; and inability to use drip application in hilly terrain in California. In California, MBTOC notes that alternatives which do not contain 1,3-D (e.g. Pic and metham applied sequentially, Pic EC and shank injected Pic in some cases) would be effective in part of the area affected by township caps (Ajwa et al. 2002, 2004; Haar et al. 2001; Nelson et al. 2001a). Usage data indicates that Pic alone and Pic mixtures are being adopted in strawberry fruit in California, particularly in the southern areas (PUR data cited in Trout and Damodaran 2004), where short day cultivars are grown (California Strawberry Commission 2005). The CUN noted that producers of day-neutral cultivars (e.g. Diamonte) could miss early market windows due to longer equipment set-up time for drip application and/or reduced harvest period. However, the Party noted that this is not a serious problem for short day cultivars, such as Camarosa. Taking account of the additional information provided by the Party, MBTOC recommends for California 205.271 tonnes under Section III, based on estimated adoption rates for alternatives (c. 700 ha/yr, based on data in Trout and Damodaran 2004) for alternatives that do not contain 1,3-D that could be adopted on further areas of short day cultivars (Camarosa and Ventana). MBTOC concludes that the dosage reductions applied in the October 2004 TEAP report remain relevant to Florida and southeastern states, taking account of strip fumigation and MBTOC's guideline dosage reductions. MBTOC notes that where there is concern that these reduced rates may not meet required levels of pest control there is scope for improved performance through adopting barrier film technology with reduced MB rates.</p>	Yield changes with alts. relative to MB result in decreased relative net revenue, sometimes with additional adverse effect of delayed harvest dates.

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
USA	CUN2003/062, USc6N15	Tomato - field	2876.046	2222.934	627.552	253.431	<p>MBTOC recommends a reduced CUE of 253.431 tonnes the Section III component of the 2006 use, being 247.950 tonnes for SE US and 5.501 tonnes for associated research. In the initial assessment, MBTOC made no reduction in Michigan because alternatives were not considered feasible due to market window issues. In California, MBTOC assessed that 1,3-D/Pic was suitable for pathogens in non-township cap areas and metham sodium as a general treatment for all areas, but the Party claimed it was uneconomical because of yield loss. After reassessment, MBTOC still considers metham sodium alone or with chloropicrin technically suitable for those areas where 1,3-D was not available for hillslopes because of township caps. According to 2003 data available from the California Department of Pesticide Regulation, metham sodium is widely used throughout California. It can be either drip applied or injected throughout hillslopes. Furthermore the yield loss of 15% stated by the Party was not fully substantiated. As technical alternatives exist, MBTOC did not recommend reinstating this component. In the initial assessment in SE USA, the nominated quantities were reduced for dosage rates to conform with MBTOC guidelines and a reduction for non-karst areas, to account for adoption of alternatives shown to be technically effective for tomatoes. This included increased use of 1,3-D/Pic with or without herbicides, and use of metham sodium with or without chloropicrin (Csinos et al 2002, Gilreath et al, 2003), and use of other measures, including herbicides for management of nutgrass. Further information is sought on why key alternatives shown to be effective in research trials are considered unsuitable for both karst and nonkarst areas (Gilreath et al, 2005a,b). No further evidence was provided by the Party to refute the use of technical alternatives in non-karst areas, and the 6% yield loss provided by the Party for metham sodium treatment could not be substantiated. Also MBTOC suggests that further loss from planting delays with alternatives can be managed, in some instances, by altering crop scheduling. However, in the absence of definitive data, MBTOC suggests that this component of the nomination be approved. Dosage rates in all south east USA were reduced (*200/223) for a maximum of 200kg/ha of MB in MB:Pic 67:33 to align with MBTOC guidelines. Whilst MBTOC</p>	Yield changes with alts. relative to MB result in decreased relative net revenue, sometimes with additional adverse effect of delayed harvest dates.

Party	MBTOC reference numbers	Industry	Total CUE for 2005 approved by 16MOP or 1ExMOP	CUE for 2006 approved by 16 MOP under Section IIA	Sect. III - 2006 approved CUNs under para. 5	Quantity for Section III recommended by MBTOC for 2006	Comments by MBTOC	Basis of economic argument
							understands that nutgrass control may require higher MB rates with a MB/Pic mixture 67:33 under standard films, there appears to be scope for further substantial reduction in MB use in this area through increased proportions of Pic in MB/Pic mixtures and adoption of barrier film technology together with reduced MB dosages (Glireath et al., 2005a)	

Footnotes:

- N Denotes a nomination evaluated as 'not recommended'
- n/a The Party provided no information regarding economic feasibility or explicitly stated that lack of economic feasibility was not the basis for the CUN
- (a) CUE for 2005 covered both flour mills and pasta-making facilities
- (b) CUE for 2005 covered tomato, eggplant and peppers
- (c) CUE for 2005 incorporated both strawberry fruit production and raspberries