

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



UNEP

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

OCTOBER 2011

**EVALUATION OF 2011 CRITICAL USE NOMINATIONS FOR METHYL
BROMIDE AND RELATED MATTERS**

FINAL REPORT

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

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Reproduction: UNON Nairobi

Date: October 2011

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ISBN: 978-9966-20-007-5

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Acknowledgement

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

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Common Acronyms

1,3-D	1,3-dichloropropene
A5	Article 5 Party
CUE	Critical Use Exemption
CUN	Critical Use Nomination
DOI	Disclosure of Interest
EC	European Community
EMOP	Extraordinary Meeting of the Parties
EPA	Environmental Protection Agency
EPPO	European Plant Protection Organisation
IM	Iodomethane
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
ISPM	International Standard Phytosanitary Measure
LPBF	Low Permeability Barrier Film (including VIF films)
MB	Methyl Bromide
MBTOC	Methyl Bromide Technical Options Committee
MBTOC QPS	Methyl Bromide Technical Options Committee, Quarantine and Preshipment Subcommittee
MBTOC SC	Methyl Bromide Technical Options Committee, Structures and Commodities Subcommittee
MBTOC S	Methyl Bromide Technical Options Soils Subcommittee
MITC	Methyl isothiocyanate
MOP	Meeting of the Parties
MS	Metham sodium
OEWG	Open Ended Working Group
Pic	Chloropicrin
QPS	Quarantine and Pre-shipment
SF	Sulfuryl fluoride
TEAP	Technology and Economics Assessment Panel
USA	United States of America
VIF	Virtually Impermeable Film
VOC	Volatile Organic Compounds

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1 Scope of the report

This 2011 final report provides the final evaluations by MBTOC of CUNs submitted for methyl bromide (MB) in 2012 and 2013 by four Parties (Australia, Canada, Japan, USA) in accordance with Decision IX/6. CUNs were submitted by one Party for research purposes in 2012 and 2013, but these were subsequently withdrawn in October 2011 by the Party. CUNs were submitted to the Ozone Secretariat by the Parties, in accordance with the timetable set out in the Annex I referred to by Decision XVI/4.

This final report provides new updated recommendations for the CUNs for which the Parties provided further information or requested reassessment, lists the CUNs for which interim assessments have not changed and provides information on the CUNs from Parties on stocks (Decision Ex.1/4 (9f)). Partial information on actual MB consumption for critical uses (Decision XVII/9) and apparent adoption rates of alternatives, as evidenced by trend lines on reduction of MB CUNs (Decisions XIX/9, XX/5) are also provided. This condensed report covers full evaluation of CUNs where Parties requested a review at or after the 31st OEWG and any other CUNs where circumstances have changed. The interim May 2011 TEAP report has further details of assessment in this round (TEAP, 2011).

Standard presumptions used in the final assessment in the 2011 round were the same as those used previously.

MBTOC Soils (MBTOC S) has initial responsibility for the pre-plant uses and alternatives of methyl bromide. MBTOC Structures and Commodities (MBTOC SC) has initial responsibility for issues concerning methyl bromide uses and MBTOC Quarantine and Preshipment (QPS) for issues related to alternatives for quarantine and pre-shipment.

Outcomes from deliberations of CUNs by MBTOC S were considered at a MBTOC meeting by 15 members held in The Netherlands from 10-12 October 2011. The position of those not able to attend was communicated via electronic communication. No non attending member disagreed with the consensus positions on nominations achieved by MBTOC at the meeting. One nomination however failed to achieve consensus at the meeting and a minority report was submitted.

Deliberations for MBTOC SC were discussed and finalized via electronic communication and each member was asked to provide their agreement, disagreement or agreement not to block consensus on the final recommendation. Recommendations made by MBTOC S at its face to face meeting and those received from MBTOC SC were circulated to all MBTOC as part of finalization of the nominations within the whole committee.

In re-assessing nominations that had been categorised as “Unable to Assess” at MBTOC’s meeting in Turkey in March 2011 or had been revised or put forward for reassessment by the Party, MBTOC followed Annex 1 of MOP16 states that MBTOC “*meets to reassess only those critical-use nominations in the “unable to assess” category*”. Furthermore, Decision XII/6(4) requires “*MBTOC to ensure that it develops its recommendations in a consensus process that includes full discussion among all available Committee members*”.

1.1. Disclosure of interest

As in past reports, all MBTOC members have updated disclosure of interest forms relating specifically to their level of national, regional or enterprise involvement for the 2011 CUN process. The Disclosure of Interest declarations can be found on the internet at http://ozone.unep.org/Assessment_Panels/TEAP/index.shtml and a list of members in Annex III of this report. As in previous rounds, some members withdrew from a particular CUN assessment or only provided technical advice on request for those nominations where a potential conflict of interest was declared. MBTOC co-chairs applied recent guidelines published by TEAP (May 2011) that provided guidance to TOCs on the application of declarations of interest to the best extent possible.

2 Critical Use Nominations for methyl bromide

2.1. Mandate

Under Article 2H of the Montreal Protocol the production and consumption (defined as production plus imports minus exports) of MB 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 MB that qualify as critical. Parties established criteria, under Decision IX/6 of the Protocol and other relevant decisions, which all such uses need to fully comply with in order to be granted an exemption. TEAP and its MBTOC provide guidance to the Parties' decisions on critical use exemptions in accordance with Decisions IX/6 and Annex I of Decision XVI/4.

2.2. Fulfilment of Decision IX/6

Decision XVI/2 directed MBTOC to indicate whether all CUNs fully met the requirements of Decision IX/6. When the requirements of Decision IX/6 were met, MBTOC recommended the full amount of the nomination. Where some of the conditions were not fully met, MBTOC recommended a decreased amount when a technical alternative was considered effective or, in a few cases, when the Party failed to demonstrate that it was not effective. In this round of CUNs, as in previous rounds, MBTOC considered all information provided by the Parties up to the date of the assessment.

Now that technically effective alternatives have been identified for most applications, regulations on the use of these alternatives and comparative information on the economic feasibility/infeasibility of their use compared to MB are critical to the outcomes of present and future CUNs. It is important that Parties continue to provide updates on regulatory changes with alternatives and MB and a breakdown of the economic feasibility of alternatives compared to MB if they are relevant to the nomination. Without this information, further CUNs may not be assessable, as MBTOC may not be able to analyse the impact of national, subnational and local regulations and law as required in Decision XX/5. In some cases, MBTOC has proposed existing commercially and economically feasible alternatives and potential research and regulatory issues to Parties that may assist the phase out of MB.

In paragraph 20 of Annex 1 referred to in Decision XVI/4, Parties, *inter alia*, specifically requested that, in cases where a nomination relies on the economic criteria of Decision IX/6, MBTOC's report should explicitly state the central basis for the Parties economic argument relating to CUNs.

2.3. Consideration of stocks - Decision Ex.1/4 (9f)

Under decision Ex.I/4(9f) Parties nominating critical use exemptions are requested to submit an accounting framework with the information on stocks. Since the consideration of stocks is an active area of negotiation for the Parties, MBTOC has not made an adjustment to the final assessment of nominations to account for stocks held and has relied on Parties to make this adjustment.

In accordance with Decision XVIII/13(7), a summary of the data on stocks was reported in the May TEAP 2011 report (Tables 2.1 – 2.4). No further information from Parties was required for this report.

Table 2-1. Quantities of MB (metric tonnes) 'on hand' at the beginning and end of 2005, as first reported by Parties in 2006/2007 under Decision XVI/6.

Party	Critical use exemptions authorized by MOP for 2005	Quantity of MB as reported by Parties (metric tonnes)				
		Amount on hand at start of 2005	Quantity acquired for CUEs in 2005 (production +imports)	Amount available for use in 2005	Quantity used for CUEs in 2005	Amount on hand at the end of 2005
Australia	146.6	0	114.912	114.912	114.912	0
Canada	61.792	0	48.858	48.858	45.146	3.712
EU	4 392.812	216.198	2 435.319	2 651.517	2 530.099	121.023
Israel	1 089.306	16.358	1 072.35	1 088.708	1 088.708	0
Japan	748	0	594.995	594.995	546.861	48.134
New Zealand	50	6.9	40.5	47.4	44.58	2.81
USA(a)	9 552.879		7 613	not reported	7 170	443

(a) Additional information on stocks was reported on US EPA website, September 2006: MB inventory held by USA companies: 2004 = 12,994 tonnes; 2005 = 9,974 tonnes.

Table 2-2. Quantities of MB 'on hand' at the beginning and end of 2008, as reported by Parties in 2009 under Decision XVI/6.

Party	Critical use exemptions authorized by MOP for 2008	Quantity of MB as reported by Parties (metric tonnes)				
		Amount onhand at start of 2008	Quantity acquired for CUEs in 2008 (production +imports)	Amount available for use in 2008	Quantity used for CUEs in 2008	Amount on hand at the end of 2008
Australia	48.450	0	41.037	41.037	41.037	0
Canada	42.19	0.348	32.937	33.285	31.281	1.997
EU	245.146	6.409	206.146	212.555	212.463	0.092
Israel						
Japan	443.775	24.467	392.994	417.461	409.937	7.524
USA	5 336	1 730	3 036	9464	4 083	5381(b)
		6458(a)				269(c)

(a) Amount of pre-2005 stocks; (b) Includes the pre-2005 stocks; (c). Amount of unused allocation for CUEs which will be reduced from following years production

Table 2-3. Quantities of MB ‘on hand’ at the beginning and end of 2009, as reported by Parties in 2010 under Decision XVI/6.

Party	Critical use exemption authorized by MOP for 2009	Quantity of MB as reported by Parties (metric tonnes)				
		Amount on hand at start of 2009	Quantity acquired for CUEs in 2009 (production +imports)	Amount available for use in 2009	Quantity used for CUEs in 2009	Amount on hand at the end of 2009
Australia	37.61	0	33.278	33.278	33.278	0
Canada	39.1	1.997	30.276	30.276	23.8	6.38
Israel	Not Reported					
Japan	305.380	11.882	278.616	290.498	286.532	3.966
USA	2,276	4,273(a)	2,274	6,547	2,215 1,135(d)	3,063 (b) 59 (c)

(a) Amount of pre-2005 stocks

(b) Includes the pre-2005 stocks

(c).Amount of unused allocation for CUEs which will be reduced from following years production

(d) Stocks used for CUE uses in 2009

Table 2-4. Quantities of MB ‘on hand’ at the beginning and end of 2010, as reported by Parties in 2011 under Decision XVI/6.

Party	Critical use exemption authorized by MOP for 2010	Quantity of MB as reported by Parties (metric tonnes)				
		Amount on hand at start of 2010	Quantity acquired for CUEs in 2010 (production +imports)	Amount available for use in 2010	Quantity used for CUEs in 2010	Amount on hand at the end of 2010
Australia	36.44	0	34.167	34.167	34.167	0
Canada	33.277	6.38	23.456	29.836	25.254	3.4
Japan	267	8.82	248.67	257.49	251.159	6.331
USA	1,956	3,063 (a)	1,955	5,018	1,955 613 (d)	1,803(b)

(a) Amount of pre-2005 stocks available at the start of 2010

(b) Amount of pre-2005 stocks available at the end of 2010.

(d) Stocks used for CUE uses in 2010

In 2006, the US predicted that pre 2005 stocks for preplant soil uses would be exhausted by 2009, yet pre 2005 stocks are still available in 2011. It is noted that the stocks recently reported by the United States (about 1,800 tonnes) were approximately three times the quantity nominated by the US for 2013 (about 604 tonnes) and suggests Parties may wish to review this information in the light of the Decision IX/6 1(b)(ii) that “...permits production

only if methyl bromide is not available in sufficient quantity and quality from existing stocks...”.

It is noted that stocks are privately held in the United States and market forces determine when and at what price stocks are used. It is also noted that the US has made allowances for some of the use of these stocks as critical allowances for CUNs when licensing critical uses of methyl bromide and suggests that Parties may wish to seek clarification on how the remaining stocks will be apportioned.

2.3.1. Reporting of MB consumption for critical use - Decision XVII/9

Decision XVII/9(10) of the 17th MOP requests TEAP and its MBTOC to “*report for 2005 and annually thereafter, for each agreed critical use category, the amount of methyl bromide nominated by a Party, the amount of the agreed critical use and either:*

- (a) The amount licensed, permitted or authorised; or*
- (b) The amount used*

Since the start of the CUN reviews in 2003, MBTOC has provided the amounts of MB nominated and agreed for each critical use (Annexes III and IV). Australia, Canada, Japan and the United States that submitted nominations for 2012 and/or 2013 did not supply data under Form 2 of the accounting framework as it was not accepted by the Parties (refer p. 65 of the Handbook on Critical Use Nominations (version 6 of December 2007)). The data reported here for (a) and (b) above is therefore incomplete. Some Parties record part of the information under their own local reporting requirements.

2.4 Trends in methyl bromide use for CUEs since 2005

The nominated amounts and the apparent rate of reduction in MB or adoption of alternatives achieved by Parties are shown in Table 2.5, as well as Figures 2.1. and 2.2. It is noted that for those countries that have pre-2005 stocks of MB that are being drawn down, the reductions in CUEs from year to year cannot be taken directly as evidence of alternative adoption since pre-2005 stocks may have been used in the same sectors. Table 3.1 and 3.2 in particular show the amounts nominated by Parties for preplant soil uses and those recommended for ‘Critical Use’ in 2013.

Decision XVII/9 requires TEAP to show trends in the phase out of the critical uses of MB by the Parties. As part of the requirements of Decision XVII/9, trends in phase out by Parties are shown below. Since 2005, there has been a progressive trend in the reduction of methyl bromide for CUNs by all Parties for preplant soil uses and post harvest uses, although this has occurred at different rates. Figs 2.1 and 2.2 show the trends in the reduction in amounts approved/nominated by Parties for ‘Critical Use’ from 2005 to 2013 for some key uses. The complete trends in phase out of MB by country, as indicated by change in CUE, are shown in Annexes III and IV.

Figure 2-1. Amounts of MB exempted for CUE uses in selected preplant soil industries from 2005 to 2012. Solid lines indicate the trend in CUE methyl bromide approved by the Parties. Dashed lines indicate quantity of MB nominated by the Parties in 2013. (See table 3.3 for exact quantities nominated by the Party for 2013)

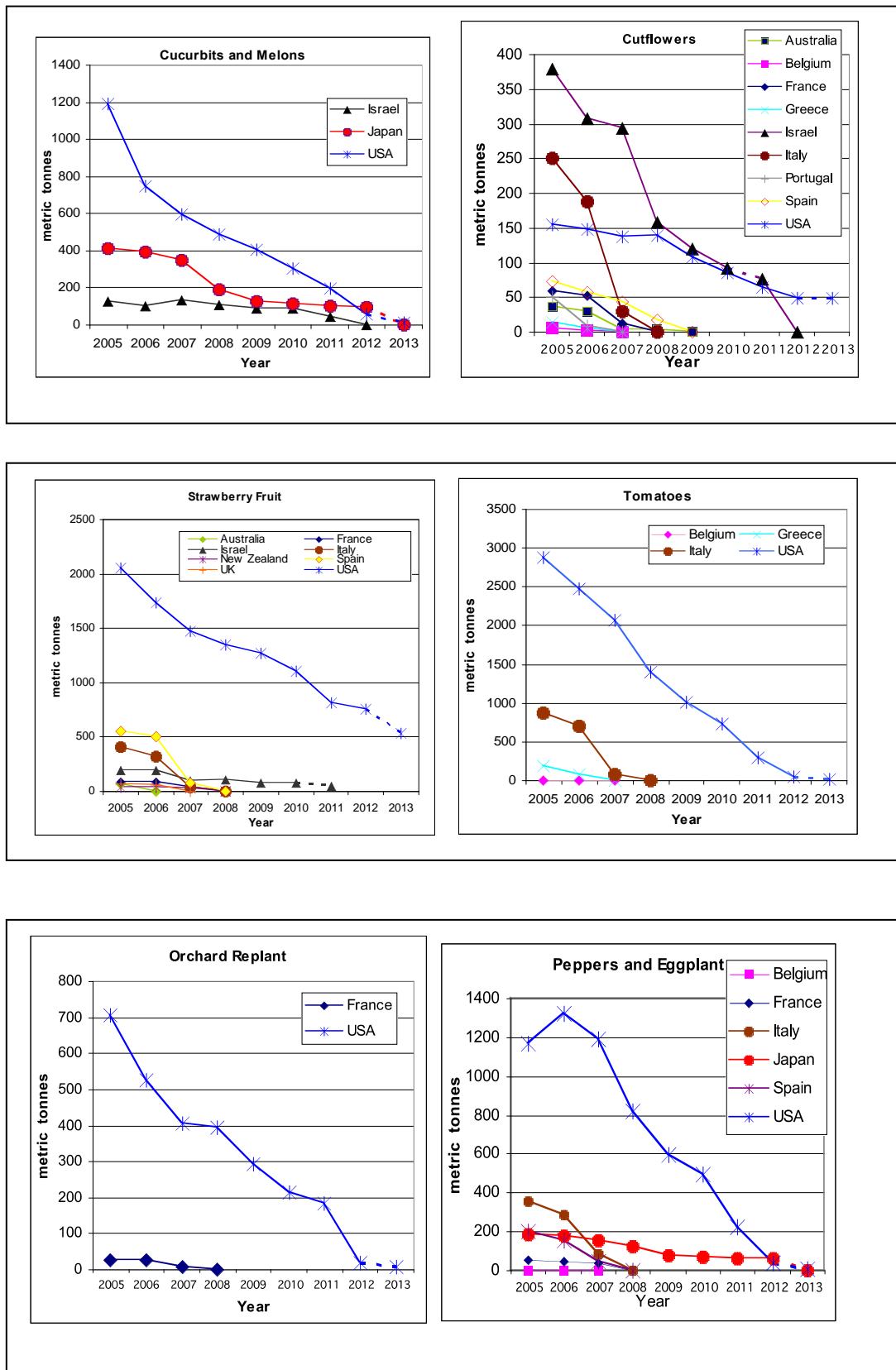
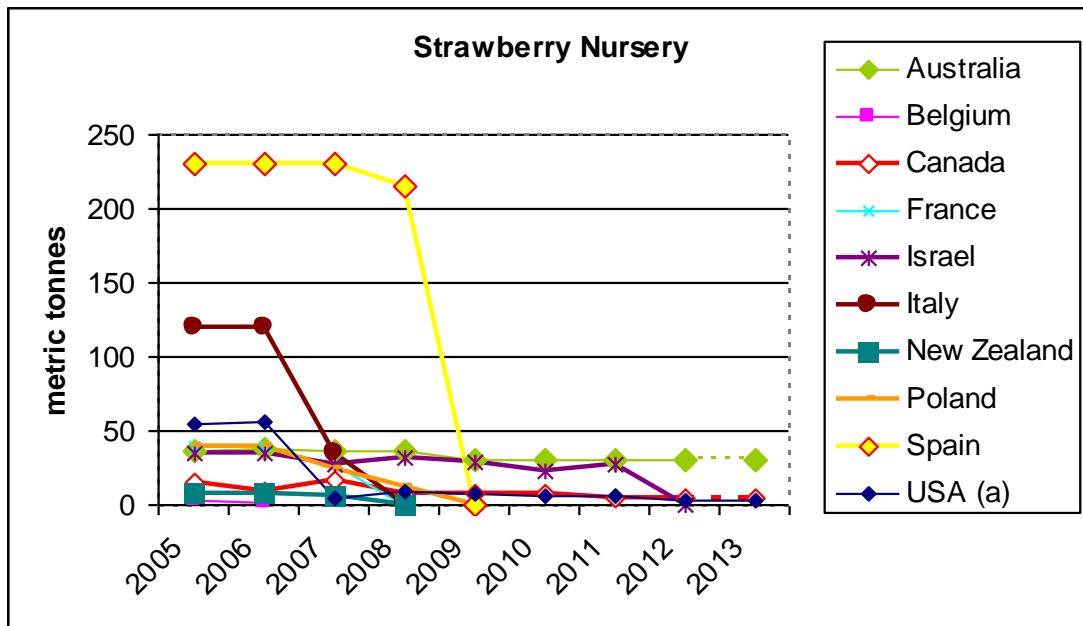
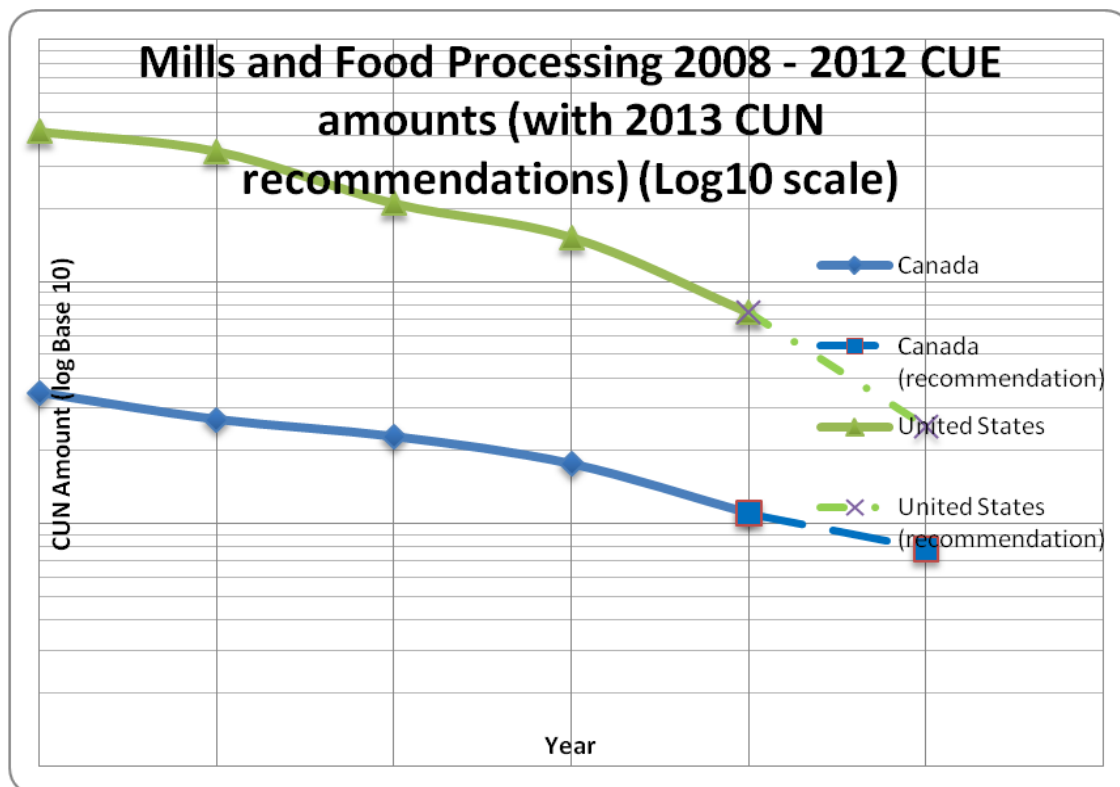


Figure 2-2. Amounts of MB exempted for CUE uses in the strawberry nursery sector from 2005 to 2013. Solid lines indicate the trends in CUE methyl bromide approved by the Parties. Dashed lines indicate quantity of MB nominated by the Party in 2013.



- Additional amounts of MB (Estimated 460 t) are exempted under QPS regulations in the USA (TEAP 2010).

Figure 2-3. Amounts of MB exempted for CUE uses in mills and food processing facilities from 2008 to 2012. Solid lines indicate trend in CUE methyl bromide. Dashed lines indicate quantity of MB recommended by MBTOC for 2013. Chart uses Log 10 scale.



Note that a number of countries (Belgium, France, Germany, Greece, Israel, Italy, UK) have phased out MB for use in mills and food processing as of 2008

2.5. Article 5 issues

Methyl bromide is due to be fully phased out in A5 Parties by Jan 1 2015, 10 years after full phaseout by non-A5 Parties. In both cases, uses for feedstock and QPS are exempted from phase out under the control measures described in Article 2H. There is also provision for exemption from phase out for uses deemed ‘critical’ according to Article 2H, as complying with Decision IX/6.

Presently, nearly 80% of the controlled consumption in A5 Parties has been phased out, well ahead of the 2015 deadline. This has been achieved largely as a result of investment projects implemented by the Montreal Protocol agencies, with MLF funding. Almost all remaining MB consuming Parties have agreements in place with the MLF for full phaseout of methyl bromide by 2015 at the latest, very often earlier. These are usually accompanied with legislation to ban further consumption of MB for controlled uses, and funding to support on going implementation of alternatives therefore promoting the sustainability of the phase out.

Article 5 Parties may choose to submit nominations for Critical Use Exemptions (CUEs) for remaining uses they consider appropriate for year 2015 and possibly subsequently. The first CUNs by non-A5 Parties were made in 2003 for CUEs to be in force in 2005. If a similar advanced submission period is to be followed, some A5 Parties may choose to submit CUNs in 2013 for assessment by MBTOC for potential use as 2015 CUEs.

MBTOC is mindful of the difficult and complex process that occurred during the first round of CUNs in 2003. TEAP urges Parties to consider the requirements for CUNs in due time as

set out in the 'Handbook on Critical Use Nominations'
(http://ozone.unep.org/Assessment_Panels/TEAP/Reports/MBTOC/Handbook%20CUN-version5-27Nov06.pdf).

2.6. Critical Use Nominations review

In considering the CUNs submitted in 2011, as in previous rounds, both MBTOC subcommittees applied the standards contained in Annex I of the final report of 16 MOP, and, where relevant, the standard presumptions. Standard presumptions for soils are given below. In particular MBTOC sought to provide consistent treatment of CUNs within and between Parties while at the same time taking local circumstances into consideration. Unless otherwise indicated, the most recent CUE approved by the Parties for a particular CUN was used as baseline for consideration of continuing nominations.

In evaluating the CUNs for soil treatments, MBTOC assumed that a technically feasible alternative to MB would need to provide sufficient pest and/or weed control for continued production of that crop to existing market standards.

For commodity and structural applications, it was assumed that technically and economically feasible alternatives 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, while ensuring the costs were within 20% (MBTOC 2010) of the cost of using methyl bromide for it to be considered economically feasible in the context of that nomination, to the extent that could be determined.

In general, CUNs were submitted due to the following issues: regulatory restrictions that did not allow partial or full use of alternatives, difficulties in the scale-up of alternatives, alternatives considered uneconomical and to a much smaller degree, the technical unavailability of alternatives. In structures and commodities CUNs noted that the US Environmental Protection Agency has proposed phasing out the use of sulfuryl fluoride for postharvest uses. This situation is discussed further in the 2010 Assessment Report and in the 2011 Progress Report.

Nominations were submitted for preplant soil use and/or postharvest use in 2013 by Australia, Canada, Japan and the USA. The total nominated amount for all countries for 2013 was 724.611 t and this represented a 50 % reduction to that nominated in 2010 for 2012. This was reduced by 27.61 tonnes due to revision of the vegetable CUNs and withdrawal of the research CUNs by the US. The final recommendation for 2013 was 610.531 t, ie. 88% of that nominated (Table 2.5).

The US submitted a CUN in Jan 2011 that nominated quantities of MB for 2012 and 2013 for various research activities associated with benchmarking alternatives to methyl bromide for registration and other purposes, improving existing methyl bromide uses, particularly for QPS purposes, developing new QPS uses and for work on emission control and reduction for MB.

In May, part of this CUN was recommended by MBTOC for a CUE (for research into cured pork disinfestation), subject to the quantities needed not being available from stocks, a condition required under Decision XVII/9 (7). The remainder was categorised as 'unable-to-assess' in TEAP May 2011 report.

There was correspondence between MBTOC and the nominating Party subsequent to 31st OEWG seeking further clarification of aspects of the nomination. The Party withdrew this nomination in total (preharvest and postharvest aspects) in October 2011. It stated that it was now possible to conduct the required robust research program without access to a CUE.

2.7. Minority reports

Consistent with Article 4(1) of Terms of Reference for TEAP as they apply to technical options committees, two Minority Reports were submitted by some MBTOC members after the October meeting in The Netherlands.

Two signed Minority Reports with technical justification were submitted by MBTOC members on nominations from the United States as shown below. The full text of the minority reports is shown in Sections 3.4 and 4.3.

Minority Report 1: United States of America nomination for the use of methyl bromide for strawberry fruit production in California in 2013.

Minority Report 2: United States of America nomination for the use of methyl bromide for cured pork in the USA.

TEAP CO-CHAIR STATEMENT ON MBTOC FINAL CUN REPORT OF OCTOBER 2011

TEAP co-chairs acknowledge and appreciate MBTOC's thorough and detailed re-assessment of the two CUNs judged by TEAP and its MBTOC as "unable to assess" earlier in the year, and of the five other CUNs which were either revised or put forward for reassessment by one Party. Although MBTOC was able to make final consensus recommendations in most cases, regrettably the committee could not reach consensus on two instances, (the US nominations for a portion of MB preplant soil fumigation for strawberry fruit and the US nomination for cured pork) leading to two minority reports.

TEAP co-chairs note that the minority report on the US nomination of cured pork was submitted by one member who asks that TEAP categorize the recommendation as "unable to assess". This request was considered, but mindful of the importance prompt publication, it was decided to put forward to Parties the majority and minority recommendations without comment.

TEAP co-chairs are aware of the complexity of the Critical Use Nominations and the careful and detailed assessment process they entail. TEAP will continue working on deliberation process and recusal guidelines to facilitate the work of all of its TOCs and will continue to reorganise TOCs and renew expert membership accordingly, taking into consideration the continuity and balance as well as the necessary expertise to respond to requirements as set out by tasks put forward by the Parties.

Table 2-5. Summary of Critical Use Nominations and Exemptions

	Quantities Nominated									Quantities Approved							Interim Recommendation		
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2005 (1ExMOP and 16MOP)	2006 (16MOP+ 2ExMOP+ 17MOP)	2007 (17MOP + 18MOP)	2008 (18MOP + 19MOP)	2009 (19MOP)	2010 (20MOP + 21MOP)	2011 (21MOP)	2012	2012*	2013*
Australia	206.950	81.250	52.145	52.900	38.990	37.610	35.450	34.660	32.164	146.600	75.100	48.517	48.450	37.610	36.440	28.710	31.708		32.164
Canada	61.992	53.897	46.745	42.241	39.115	35.080	19.368 +3.529	16.281	13.444	61.792	53.897	52.874	36.112	39.020	30.340 +3.529	19.368	16.281		13.109
European Community ₁	5754.361	4213.47	1239.873	245.00	0	0	0	0	0	4392.812	3536.755	689.142	245.146	0	0	0	0		0
Israel	1117.156	1081.506	1236.517	952.845	699.448	383.700	232.247	0	0	1089.306	880.295	966.715	860.580	610.854	290.878	0	0		
Japan	748.000	741.400	651.700	589.600	508.900	288.500	249.420	221.104	3.317	748.000	741.400	636.172	443.775	305.380	267.000	239.746	219.609		3.317
New Zealand	53.085	53.085	32.573	0	0	0	0	0	0	50.000	42.000	18.234	0	0	0	0	0		0
Switzerland	8.700	7.000	0	0	0	0	0	0	0	8.700	7.000	0	0	0	0	0	0		0
USA ^a	10753.997	9386.229	7417.999	6415.153	4958.034	3299.490	2388.128	1181.779+ 7.445	657.541 rev. 641.559	9552.879	8081.753	6749.060	5355.976	4261.974	3232.856 +2.018	2055.200	993.706	nil	562.328
TOTALS	18704.241	15617.837	10677.552	8297.739	6244.487	4044.380	2928.142	1461.269	706.466 rev. 690.484	16050.089	13418.200	9160.714	6990.039	5,254.838	3572.183	2343.024	1261.304	nil	610.918

* Not yet available.

₁ Members of the European Community which had CUNs/CUEs included:

2005 – Belgium, France, Germany, Greece, Italy, Netherlands, Poland, Portugal, Spain, and the United Kingdom.

2006 – Belgium, France, Germany, Greece, Ireland, Italy, Latvia, Malta, Netherlands, Poland, Portugal, Spain, and the United Kingdom.

2007 – France, Greece, Ireland, Italy, Netherlands, Poland, Spain, and the United Kingdom

2008 – Poland, Spain

^a – The US reduced the nominated amounts on July 14th and later withdraw the research nominations for 2012 and 2013

3 MBTOC Soils: Final evaluations of 2011 Critical Use Nominations for methyl bromide for 2012 and 2013

3.1 Critical Use Nominations submitted

For the preplant soils CUNs, Australia and Canada submitted similar amounts to the previous years highlighting difficulties with phase out of MB for the strawberry nursery sector. In the USA almost all sectors were making significant progress towards phase out in this round although restrictions on the use of alternatives in California were affecting progress towards phase out, particularly in the strawberry fruit sector in California.

In the 2011 nominations, 13 CUNs were submitted for preplant soil uses, 1 for 2012 and 12 for 2013. This compared to 27 nominations submitted in 2010 but there were fewer in 2011 as Japan and Israel no longer submitted CUNs. USA did not submit a nomination for forest nurseries and sweet potato slips, both of which had been submitted in previous years, but did submit a new nomination for research uses in 2012 and 2013 which have since been withdrawn.

There were substantial reductions in the quantity of methyl bromide nominated by USA for 2013. As stated in previous reports, Israel and Japan plan to phase out MB in 2011 and 2012 respectively.

After the 31st OEWG in Montreal, MBTOC Soils was requested to reassess several nominations (the US strawberry fruit, ornamentals, vegetables and research nominations) and MBTOC SC two nominations (cured pork and three aspects of the research nomination).

After consultation with members and careful consideration of the complex issues involved, which made email discussion cumbersome and virtually impossible, the soils MBTOC co-chairs decided to hold a face-to-face meeting.

Following TEAP instructions arising from the TEAP meeting of May 2011 (TEAP, 2011), the meeting was open to all MBTOC members who had indicated an intention to take part fully in evaluation of Soils CUN during the August member survey. This includes reading all background material in CUNs and all information related to issues surrounding the nominations. Questions to further clarify the nominations were sent to the Party and answers circulated to members. During this process, the US Party reduced 3 nominations for the vegetable and nursery stock sectors and all nominations for research uses.

MBTOC met from 10-11 October 2011 in Leusden, The Netherlands, to finalise the Soils CUNs, discuss procedural issues related to CUN assessments and prepare the final report. On 12 October there was a field visit to see strawberry runner production and to learn about equipment used for runner disinfestation. The four MBTOC Co-Chairs, eight additional members of the soils subcommittee, two members of the QPS subcommittee and one MBTOC economist attended the meeting.

The meeting was held as required by the time schedule for the re-assessment of nominations categorised as “unable to assess”, or of nominations for which the Parties had submitted additional information as described in Annex I referred to in Decision XVI/4. Consensus decisions were made in plenary, and all comments made by members were considered in final recommendations. A communication system was established to allow those members not present, but who had indicated they wished to take part of the deliberations, to participate. One MBTOC member made contact with the chairs during the meeting. Minutes of the meeting, summarising the conclusions for each day were taken and were circulated to all members (including those not present) at the end of each day. Bilateral consultation with the US Party was held by teleconference on the afternoon of Tuesday, October 11.

3.2. CUN assessment for preplant soil uses

In the interim assessment by MBTOC in May 2011 recommendations were made on all preplant soils nominations except for the research nominations for 2012 and 2013 which were unable to be assessed. As mentioned, the research nominations were subsequently withdrawn by the Party. At the 31 OEWS in Montreal, MBTOC held bilateral meetings with Canada, the USA and the Californian Strawberry Commission. The US Party advised that further information would be provided to support a review of the strawberry fruit, vegetable and research nominations by July 15, 2011. Information exchange continued after that date.

During the final meeting in the Netherlands, MBTOC held a bilateral teleconference with the US delegation, and participated in a field tour to see how The Netherlands was producing strawberry fruit and nursery plants without methyl bromide and consider the issues for this sector in other regions. The total nominated amount for all countries for preplant soil use in March 2013 was 661.677 t. This was reduced to 645.695 t (ie reduced by 15.982 t) in 2013 due to revision of the vegetable CUNs and withdrawal of the research CUNs by the US. The final recommendation for 2013 was 567.442 t, ie. 86% of that nominated (Table 3-1). A nomination for research of 6.111t for trials on preplant soil uses by USA for 2012 was also withdrawn.

MBTOC has sometimes recommended quantities of MB for 2013, which are less those nominated. The grounds used for these recommendations are given in detail after the relevant CUNs in Tables 3-7 and 4-2. The adjustments for preplant soils use may in part be to account for presumptions and are given in Tables 3-4 and 3-5.

Table 3-1. Changes occurring to nominated and recommended amounts of MB (metric tonnes) for preplant soil uses after the May 2011 interim report.

Party	CUN	Initial nomination by the Party	Interim MBTOC recommendation	Revised nomination by the Party after the 30 th OEWS
USA	Cucurbits	11.899	11.899*	3.887
	Peppers	5.673	5.673*	5.605
	Tomato	10.741	10.741*	9.107
	Nurseries	0.541	0.541*	0.476
	Research 2012	6.111	Unable	Withdrawn
	Research 2013	6.203	Unable	Withdrawn
	Total		41.168	

* Further substantiation from the Party was received on July 14th, 2011

Table 3-2 Summary of MBTOC S final recommendations for 2013 by country for CUNs received in 2011 for preplant soil use of MB (tonnes)*

Country	CUE approved at 21 st MOP	CUN for 2013	MBTOC-S final Recommendation
	2012	2013	2013
Australia	29.760	29.760	[29.760]
Canada	5.261	5.596	[5.261]
Israel	224.497	0	
Japan	216.120	0	
USA	913.31	620.118 Revised 610.339	[532.442]
Total	1164.452	645.695	[567.463]

* Figures do not include research nominations from the USA as they were withdrawn

Table 3-3. Summary of the final recommendations by MBTOC-S (in square brackets) for CUE's for preplant uses of MB (tonnes) submitted in 2011 for 2012 and 2013

Country and Sector	Final Nomination by the Party for 2103	Final Recommendation for 2013
1. Australia		
1. Strawberry runners	29.760	[29.760]
2. Canada		
1. Strawberry runners	5.596	[5.261]
3. USA*		
1. Cucurbits	(11.899) rev. [3.887]	[3.887]
2. Eggplants (field)	[1.381]	[1.381]
3. Nursery stock	(0.541) rev. [0.476]	[0.476]
4. Ornamentals	[48.164]	[40.818]
5. Orchard Replant	[6.230]	[6.230]
6. Pepper (field)	(5.673) rev. [5.604]	[5.604]
7. Strawberry (field)	[531.737]	[461.186]
8. Strawberry runners	[3.752]	[3.752]
9. Tomatoes (field)	(10.741) rev. [9.107]	[9.107]
Sub total USA	[610.339]	[532.442]
TOTAL	[645.695]	[567.463]

* The Party revised (rev.) the nominated amounts for some sectors as shown in the table

3.3. Issues related to CUN assessment for preplant soil use

Key issues which influenced assessment and the need for MB for preplant use of MB in the 2010 round were:

- i) Increased adoption of methyl iodide (MI or iodomethane) with barrier films and registration in most states of the USA that use MB in mid 2008 or December 2010 (California). This has led to commercial adoption on large sale areas in the US and substantial reduction in the US nominations in SE US and Florida.
- ii) Continued and progressive acceptance of a 3 way fumigant strategy (1,3-dichloropropene, metham sodium, Pic) as being effective for nutsedge and pathogen control in USA.
- iii) Changing regulations on key alternatives, particularly 1,3-D township caps and buffer zones on 1,3-D, metham sodium and Pic used alone or in mixtures.
- iv) Introduction of a new formulation of 1,3-D/Pic ('Pichlor 60') in the USA which increases the area that may be treated with 1,3-D in regions affected by township caps.
- v) Effect of restrictions on use of high rates of Pic (greater than 200 kg/ha (20 g/m²)) in some counties of California.
- vi) Lack of data and acceptance in specific sectors that alternatives exist, e.g. orchard replant in heavy soils, and nursery industries.

In 2011, the US indicated it no longer sought nominations for the forest nursery, and sweet potato sectors. It was unclear whether this was due to uptake of alternatives or –at least in part –to reclassification to QPS. Israel and Japan no longer sought any methyl bromide under critical use for preplant soil use, thus respecting their phase out notified to the Parties in 2010.

In the 2011 round as in past rounds, MBTOC also used adoption data of alternatives in specific regions where it was available, such as the Californian Department of Pesticide Regulation – Pesticide Use Report data to help with identifying historic use of MB within regions assessment, particularly the largest strawberry fruit nomination.

MBTOC continues to urge Parties to consider review of regulations covering the registration, use and adoption of alternatives, particularly review of barrier films to reduce dosage rates of MB and the alternatives, and associated emissions. As in previous years, Parties found alternatives more difficult to adopt for propagation materials, such as strawberry runners and nurseries. For some Parties, there is a lack of research to develop and demonstrate effectiveness of alternatives in these sectors. This lack of research effort leads MBTOC to conclude that several of the CUNs do not fully satisfy the requirements of Decision IX/6 and urges Parties to undertake research in these sectors. The impact of reviews of volatile organic compound (VOC) emissions in California (<http://www.epa.gov/iaq/voc.html>) may also have a major impact on the use of MB and alternatives.

MBTOC also notes that a large proportion of MB has been nominated for uses where regulations or legislation prevent reductions of MB dosage. For many uses, the mandatory use of MB is specified at a high dosage for either treatment of certified propagation material or because regulations prevent use of barrier films which otherwise could have reduced the MB dosage rate. Also regulations on the use of alternatives are preventing their uptake for a substantial proportion of the remaining CUNs for preplant soil use. For instance, current restrictions on dose rate for methyl iodide in California prevent the Party and MBTOC accepting it as a suitable alternative for all uses. MBTOC urges the Parties to align their local policies and regulations with internationally accepted methodologies and to allow use of MB alternatives.

3.3.1. Registration of alternatives for preplant uses - Decision Ex I/4 (9i) and (9j)

Decision Ex. I/4 (9i) requires MBTOC

“To report annually on the status of re-registration and review of methyl bromide uses for the applications reflected in the critical-use exemptions, including any information on health effects and environmental acceptability”. Further, Decision Ex I/4 (9j) requires MBTOC *“To report annually on the status of registration of alternatives and substitutes for methyl bromide, with particular emphasis on possible regulatory actions that will increase or decrease dependence on methyl bromide”*.

Iodomethane (MI) is registered for more than 28 crops in all US states except Washington and New York and this has greatly assisted phase out of MB in SE States of the USA including field-grown ornamentals, peppers, strawberries and tomatoes. In California approval was granted for iodomethane in December 2010, however use rates approved may be restrictive for certain uses according to the Party, however in combination with Pic the dosage rates are considered effective for most uses by MBTOC. It is a requisite under Decision IX/6 that Parties provide data and references to demonstrate the ineffectiveness of these formulations for a specific use, where a CUN is sought. MI has also gained registration in a number of Article 5 countries and non Article 5 countries, such as New Zealand, Mexico, Turkey and Japan and this has assisted phase out of MB for preplant uses in these countries. Registration of MI is pending in Australia and this alternative is indicated by the Party to be a main alternative which could assist phase out for MB in strawberry runners. To ensure that the mitigation measures for MI will be consistent with the measures being required for the other fumigants, the label requirements are presently being re-examined in the USA. 1,3-dichloropropene, may be subject to similar provisions when the soil fumigants are evaluated together again in 2013.

The EU has further reported that registration for 1,3-D and other alternatives including chloropicrin, dazomet and metham sodium are under review. A grace period for the registration of 1,3-D became due on 20 March 2009 and was extended, but its future registration is uncertain.

A number of other chemicals which may be alternatives to MB are being considered for impending registration in specific countries recently, including dimethyl disulphide (DMDS) in Europe and the USA.

3.3.2. Update on rates of adoption of alternatives for preplant uses - Dec.XIX/9

From 2010 onwards, Decision XIX/9 para. 3 requests: *‘ the Technology and Economic Assessment Panel to ensure that recent findings with regard to the adoption rate of alternatives are annually updated and reported to the Parties in its first report of each year and inform the work of the Panel’*.

Previous reports (see references in Table 3-7, Porter *et al.*, 2006, MBTOC 2011) show that technical alternatives exist for almost all uses requesting CUNs, but the uptake of alternatives varied between countries, crops and the pest pressure. In general, similar alternatives are being adopted by the same sectors in a number of countries, although the rate of adoption has varied depending on regulatory restrictions on use, differences in registration rates between countries and other market forces. In this round as in previous rounds of CUNs, MBTOC has recognised that a limited period of time is needed to allow the market penetration of alternatives, based on logistical, training, imports of alternatives and other information provided in the nomination by the Party (paragraph 35 in Annex 1 of the 16th Meeting of the Parties).

Figures 2-1 to 2-4 in this report show the apparent reduction rates for MB use achieved by many Parties in a number of key sectors. As noted above, the actual reduction and adoption

rates may vary from the rate of change of CUN/CUE because of factors such as use of stocks (some Parties use stocks instead of ‘freshly produced’ methyl bromide from CUEs), and/or a transfer of MB between sectors of use, which occurs in some Parties. The CUN reviews presented in Tables 3-7 and 4-2 also provide detail of some of the key alternatives that Parties have and may consider to further replace MB for the remaining uses.

Further guidance from the Parties, particularly Australia, Canada and the US of expected rates of adoption of alternatives following registration, in accordance with paragraphs 34-35 of Annex 1 of the MOP16, as this information would assist MBTOC in evaluation of CUNs in future.

3.3.3. Sustainable alternatives for preplant uses

For preplant soil uses of MB, the regulatory restrictions on 1,3-dichloropropene and Pic are preventing further adoption of these products in some regions of the USA, particularly California and this is putting pressure on industries to retain MB.

MBTOC urges Parties to consider the long term sustainability of treatments adopted as alternatives to MB, to continue to adopt environmentally sustainable and safe chemical and non-chemical alternatives for the short to medium term and to develop sustainable IPM or non-chemical approaches for the longer term. Decision IX/6 1(a)(ii) refers to alternatives that are ‘acceptable from the standpoint of environment and health’. MBTOC has consistently interpreted this to mean alternatives that are registered or allowed by the relevant regulatory authorities in individual CUN regions, without reference to the sustainability of the alternative. In the past, MBTOC visited flower growers in Southern Spain who have successfully adopted biodisinfestation as an efficient and sustainable alternative to MB.

3.3.4. Standard presumptions used in assessment of nominated quantities.

The tables below (Tables 3-4 and 3-5) provide the standard presumptions applied by MBTOC-S for this round of CUNs for preplant soil uses. These standard presumptions were first proposed in the MBTOC report of October 2005 and were presented to the Parties at 17th MOP. Studies and reports to support them have been provided in previous reports and were revised for some sectors after consideration by the Parties at the 19th MOP. The rates and practices adopted by MBTOC as standard presumptions are based on maximum rates considered acceptable by published literature and actual commercial practice.

As in the evaluations in previous years, MBTOC considered reductions to quantities of MB in particular nominations to a standard rate per treated area where technical evidence supported its use. As a special case, MBTOC continues to accept a maximum rate of 200 kg/ ha (20 g/m²) with high Pic-containing mixtures with barrier films for certified nursery production, unless regulations prescribe lower or higher rates. However, MBTOC notes that studies have shown that rates of 200 kg/ha (20g/m²) or less of MB: Pic 50:50 are effective with barrier films for production of ‘certified’ nursery material and urge Parties to consider regulations which permit these lower rates.

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.

Table 3-4. Standard presumptions used in assessment of CUNs for the 2009 and later assessments – soil treatments.

	Comment	CUN adjustment	Exceptions
1. Dosage rates	Maximum guideline rates for MB:Pic 98:2 are 25 to 35 g/m ² with barrier films (VIF or equivalent); for mixtures of MB/Pic are 12.5 to 17.5 g MB/m ² for pathogens and nutsedge respectively, under barrier films depending on the sector. All rates are 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 low permeability barrier film (e.g. VIF, TIF)	Nomination reduced proportionately to conform to barrier film use.	Where barrier film 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 Pic (Pic) is not registered
4. MB/Pic Formulation: Weeds/nutsedge ass 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 Pic or Pic-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, emission regulations on MB, or open field production of high health propagative material

Table 3-5. Maximum dosage rates for preplant soil use of MB by sector used in the 2009 and later assessments (standard presumptions).

Film Type	Maximum MB Dosage Rate (g/m²) in MB/Pic mixtures (67:33, 50:50) considered effective for:			
	Strawberries and Vegetables	Nurseries*	Orchard Replant	Ornamentals
Barrier films - Pathogens	12.5	15	15	15
Barrier films - Nutsedge	15.0	17.5	17.5	17.5
No Barrier films - Pathogens	20	20	20	20
No Barrier films - Nut sedge	26	26	26	26

* Maximum rate unless certification specifies otherwise

3.3.5. Adjustments for standard dosage rates using MB/Pic formulations

One key transitional strategy to reduce MB dosage has been the adoption of MB/Pic formulations with lower concentrations of MB (e.g. MB/Pic 50:50, 33:67 or less). These formulations are considered to be equally as effective in controlling soilborne pathogens as formulations containing higher quantities of MB (e.g. 98:2, 67:33) (e. g. Porter 2006; Melgarejo *et al.*, 2001; Santos *et al.*, 2007; Hamill *et al.*, 2004; Hanson *et al.*, 2006). Parties are urged to consider even lower dosage rates of MB for the remaining CUNs. This includes rates as low as 75 kg/ha (7.5 g/m²) with mixtures of 30:70 or 33:67 mixtures (at 250 kg/ha or 25 g/m²) or 100 kg/ha (10 g/m²) of MB in 250 kg/ha (25 g/m²) of 50:50 MB/Pic mixtures in conjunction with barrier films (Table 3.6).

Table 3-6. Actual dosage rates applied during preplant fumigation when different rates and formulations of MB/Pic mixtures are applied with and without barrier films. Rates of application reflect standard commercial applications rates.

Commercial application rates of formulation	MB/Pic formulation (dose of MB in g/m ²)			
	98:2	67:33	50:50	30:70
A. With Standard Polyethylene Films				
400	39.2	26.8	20.0	12.0
350	34.3	23.5	17.5	10.5
300	29.4	20.1	15.0	9.0
B. With Low Permeability Barrier Films (LPBF)				
250	24.5	16.8	12.5	7.5
200	19.6	13.4	10.0*	6.0
175	17.2	11.8	8.8	5.3

* Note: Trials from 1996 to 2008 (Annex III) show that a dosage of 10g/m² (e.g. MB/Pic 50:50 at 200kg/ha with LP Barrier Films) is technically feasible for many situations and equivalent to the standard dosage of >20g/m² using standard PE films

3.3.6. Use/Emission reduction technologies - Low permeability barrier films and dosage reduction

Decision XXI/11 (para 9) requested further reporting on Decision IX/6 to ensure Parties adopted emissions controls where possible. For preplant soil use, this includes the use of barrier films and lowest effective dose of MB with mixtures of chloropicrin. Other methods include deep shanking and use of ammonium thiosulphate and different irrigation technologies (Yates *et al.*, 2007, Yates *et al.*, 2009). These latter technologies have not been reported or adopted widely by Parties and need to be evaluated more widely.

In southeast USA the reported use of barrier films in vegetable crops has expanded to over 20,000 hectares and it is also exclusively used with the alternative MI to assist its effectiveness at low dosage rates (Allan, pers. comm., 2008; Chism, pers. comm., 2009). An exception to the adoption of barrier films is in the State of California in the USA where a regulation currently prevents use of barrier films with MB (California Code of Regulations Title 3 Section 6450(e). MBTOC notes that barrier films can be used with alternatives and this is consistently improving the performance of alternatives at lower dosage rates. Effectiveness at lower dosages can allow for greater areas to be treated with 1,3-D under township cap regulations or increase the likelihood of Pic being applied at dosage rates below the 125 or 200 lbs/acre restrictions presently imposed in California.

3.4. Minority report

One signed Minority Report with technical justification was submitted by MBTOC members on the nomination from the United States of America for the use of methyl bromide for strawberry fruit production in California in 2013. The full text of the minority report is shown below.

3.4.1. US Strawberry fruit CUN - Minority viewpoint

The following MBTOC members disagree with MBTOC's recommendation of 461.186 tonnes: Michelle Marcotte, James Schaub, Sally Schneider, Abraham Gamliel, Andrea Minuto and Ken Vick. Instead, these MBTOC members note that the Party has authoritatively and credibly substantiated its nomination and the recommended amount for strawberry fruit in California should be 531.737 tonnes for 2013.

Background for the October MBTOC deliberations

At the May meeting in 2011, and after listening to the majority and minority points of views, TEAP agreed to support a part of the nominated amount which was not questioned by the majority and the minority positions of MBTOC (i.e., 461.186 t). Additionally, TEAP indicated that the additional amount, 70.551 tonnes, required further substantiation of the critical area not able to use the alternatives (1,3-D and Pic and their combinations). The Party was invited to provide information for further evaluation by MBTOC for any amount above the minority recommendation up to the nominated amount (TEAP, 2011).

Additional information from the Party

In August and October, the Party provided MBTOC with a statement to clarify the area in Ventura County that could not use alternatives. The Party maintains that 40% of the strawberry hectares in Ventura County was either underreported or mis-categorized in the California Department of Pesticide Regulation Pesticide Use Report (PUR) data. The Party explained that there is a significant mis-categorization of strawberry hectares as 'soil fumigation/preplant' in the PUR data and that 85% of this aspect of the PUR data should have been counted as strawberry hectares (according to the Ventura County Agriculture Commissioner – the government office with pesticide use regulatory authority). The Party also stated that in determining the hectares requiring methyl bromide, it took into account areas where *Macrophomina* and *Fusarium* are not controlled by rates of chloropicrin (that can legally be

used) and areas where proximity to sensitive sites prevent the use of effective rates of chloropicrin. The USG has informed MBTOC that 100% of the area nominated in Ventura County is affected by these two plant diseases. Expansion of the use of chloropicrin and 1,3D as broadacre fumigants to control these diseases seems unlikely because of regulatory restrictions on the quantities of fumigants used and in the application methods allowed in regulation.

As a result of these aspects, the Party reaffirmed that 894 hectares in Ventura County cannot use alternatives. MBTOC, in continuing to recommend its May interim amount of 461.186 tonnes, has not accepted any of the new, substantive and authoritative information provided by the Party.

Assessment

It was the view of the MBTOC members named above that the Party had substantiated their nomination sufficiently. The Party has corrected the number of hectares which had been miscategorised. The Party also substantiated the need for MB on area affected by *Macrophomina* and *Fusarium* or which cannot use Pic due to regulatory constraints. Therefore these members assessed that the Party had demonstrated the general conditions for a Critical Use Exemption and credibly and authoritatively addressed TEAP's May 2011 request for further substantiation. As a result, these members hold a viewpoint inconsistent with that of the majority of MBTOC members, and recommended the amount of MB nominated by the Party for use in California strawberry fruit in 2013 (531.737 tonnes).

Table 3-7. Final evaluations of CUNs for preplant soil use submitted in 2011 for 2013

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
Australia	Strawberry runners	35.750	37.500	35.750	35.750	29.790	29.790	29.790	29.760	-	29.760	-	29.760
<p>MBTOC recommendation for 2013: MBTOC recommends a CUE of 29.760 tonnes for 2013. There has only been minor reductions made in last 5 CUEs submitted and no reduction in use rate as this is regulated by certification rules.</p> <p>The Party states that the key pests affecting strawberry runner production are fungi (<i>Phytophthora</i>, <i>Pythium</i>, <i>Rhizoctonia</i> and <i>Verticillium</i> spp.) and weeds (<i>S. arvensis</i>, <i>Agrostis tenuis</i>, <i>Raphanus</i> spp., <i>Poa annua</i>, <i>Cyperus</i> spp). The Party also states that MB:Pic 50:50 at a MB dose of 25 g/m² is required to meet certification standards. Although this quantity exceeds MBTOC's standard presumption of 20 g/m², the lower rate is unregistered. The Party's first 2-year effort using a reduced rate of 18.75 g/m² resulted in unsatisfactory results in the second year of testing. The Party initiated another 2-year study using MB/Pic (50/50) @ 400 kg/ha [20g/m²] and the standard rate MB/Pic (50/50) at 500 kg/ha [i.e. MB at 25g/m²]. Yields from the plot treated with MB/PIC [20g/m²] were 25% less than the yields from the standard rate. Two additional commercial trials were initiated in 2010/2011 using the lower rate of 20g/m² as APVMA requires 2 years of trials before approving a reduced rate. The Party states that the most promising alternative, MI/Pic, has been demonstrated in commercial scale field trials to compare with the efficacy to MB:Pic. The registrant has indicated that additional data has been requested by APVMA which will be submitted this year and should lead to registration in late 2011. While more data has been submitted to support the registration of EDN, the Party indicates that the registration status is still highly uncertain. A key alternative, 1,3-D:Pic, is considered ineffective due to phytotoxicity and doubling of plant back times in the heavy and wet soil conditions in the high elevation regions. The Party also indicates that the Victorian Strawberry Certification Authority (VSICA) completed the second year of a 2-year development program for soil-less systems for production of foundation stock strawberry runners. Results indicated that the productivity of the soil-less system is similar to the current method of production in MB:Pic fumigated soils, and the economics of the soil-less system compares favourably with the current method of production. VSICA plans to establish a commercial facility by 2012 which, if successful, would eliminate VSICA's need for MB for foundation stock in 2011/2012.</p> <p>MBTOC requires that the Party: (1) report the results with reduced rates of 20 g/m² of MB with its next CUN submission as well as the decision on whether to register the reduced rates; (2) provide a comprehensive update of the registration status of MI and EDN, (3) provide the results from the new trials using recaptured MB & Pic as well as a comprehensive plan for commercialization and (4) since the production of 60,000 foundation generation has been found to be economically feasible, the Party needs to provide the economic analysis that supports their assertion that any further expansion is not economically feasible. Although this nomination provides results of extensive research results with highly promising alternatives MBTOC expects significant adoption of these in any future nominations.</p> <p>MBTOC comments on economics 2011: The nomination was not based on economic arguments</p> <p>Comments requested in Dec. XX1/11 (para 9)</p> <ul style="list-style-type: none"> Dec. IX/6 b(i) Emission control: No, but standard films are claimed by the Party to perform the same as VIF in the cold temperatures and heavy wet soils typical for strawberry runner production. Dec. IX/6 b(iii) Research program: On going research is being conducted in (a) supporting reduced application rates of MB:Pic, (b) supporting the registration of MI; unknown for EDN; (c) use of recaptured MB & Pic; Dec. IX/6 b(iii) Appropriate effort: research effort is adequate but commercialization is confronted with regulatory obstacles. 													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
Canada	Strawberry runners (PEI)	6.840	6.840	7.995	7.462	7.462	7.462	5.261	5.261	-	5.596	-	5.261
<p>MBTOC recommendation for 2013:</p> <p>MBTOC recommends a reduced CUE of 5.261 tonnes for this use in 2013. In 2012 the requested amount was 5.261 t. In this round, the Party stated that the nomination had been reduced by 25%, but as it increased, MBTOC only recommends the quantity approved in 2012. The CUN for 2013 is based on a reduced rate for MB of 20 g/m², and MBTOC acknowledges the Party's reduction in the absence of formal registration for this dose rate.</p> <p>The Party has attempted to replace MB with 1,3-D, but 1,3-D was banned for use in Prince Edward Island in January 2003 due to ground water contamination. Chloropicrin (PIC 100) has been registered by PMRA, but the PEI authorities have denied a permit for its use until further groundwater testing has been conducted. MI registrant has not applied for registration in Canada. The company has been testing organic production from 2006 - 2009 with different varieties and has found that they obtained significant reductions in yield ranging from 40% to 70%. Only one variety using the organic production system compared favourably to conventional production. While MB:Pic 67:33 at 500 kg/ha is the only use rate registered for strawberry runners, which exceeds MBTOC's standard presumption of 200 kg/ha, the grower petitioned PMRA to use a lower rate under barrier films. PMRA, in the absence of a formal label amendment, granted permission to use a lower rate, but at the grower's own risk and liability. In 2008 the grower tested two plots totalling 2.4 ha using 25% & 30% lower rates under barrier films and expanded the area tested in 2009. The results were comparable using the reduced rates with barrier films. The CUN for 2013 is based entirely on a reduced rate for MB of 200 kg/ha for the entire area to be fumigated.</p> <p>For any future nominations, MBTOC suggests the Party (1) complete the necessary ground water studies to obtain the PIC 100 permit which was indicted by the Party to commence in 2008 and (2) test the adoption of soilless cultures for at least part of the production cycle, 3) provide an update on barriers to adoption of other key alternatives (especially methyl iodide/chloropicrin). MBTOC requests greater substantiation of effort (i.e. trial data) is provided to support any future nominations as required in Decision IX/6.</p> <p>MBTOC comments on economics 2011:</p> <p>The nomination was not based on economic arguments.</p> <p>Comments requested in Dec. XX1/11 (para 9)</p> <ul style="list-style-type: none"> Dec. IX/6 b(i) Emission reduction: Yes, uses barrier films with reduced application rate of MB conforming to MBTOC's presumptions Dec. IX/6 b(iii) Research program: No recent research; previous focus has been on organic production testing; registrant for Midas has not submitted any registration application materials at this time. Dec. IX/6 b(iii) Appropriate effort: The Party has not demonstrated an active research program on its most critical issue since it has been unable to obtain assistance to do the necessary GW testing required by PEI authorities before approving the use of PIC100 in PEI. 													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Cucurbits	1187.800	747.839	592.891	486.757	407.091	302.974	195.698	59.500	-	11.899 revised to 3.887	-	3.887
<p>MBTOC recommendation for 2013:</p> <p>MBTOC recommends an amount of 3.887 t of MB, which was the adjusted nomination by the Party as of July 2011. This was for small-scale (less than 4ha) cucurbit production in Georgia in 2013, allocated as 0.815 t for squash, 0.657 t for cucumber and 2.415 t for melon.</p> <p>Nomination by the Party</p> <p>MBTOC noted that the amount reduced by the Party (8.012 t) was a 66% reduction from the interim amount of 11.899 t recommended by MBTOC. This is 93% less than the quantity (59.494 t) approved by the Parties in 2012. The Party informed MBTOC that the nomination is for one final year to allow time for some small-scale growers of cucurbits in Georgia to adopt available alternatives.</p> <p>In its July 2011 response to questions from MBTOC, the Party informed MBTOC that it had withdrawn its previous 2013 nominations for the critical uses of methyl bromide in Maryland and Delaware (0.348 t) and South East US (7.664 t, Alabama, Arkansas, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia), leaving the critical use of MB for the production of cucurbits by producers with less than 4ha in Georgia. The target pests were reported to be mainly nutsedge, nematodes and <i>Fusarium</i> wilt. The Party stated a rate of 150 kg MB/ha would be used for both pathogen and nutsedge control. This rate conforms to MBTOC's standard presumptions for application of MB under VIF for the control of nutsedge (150 kg/ha) and pathogens (125 kg/ha).</p> <p>Circumstances of the nomination</p> <p>The Party reported that farmers needed a period of time to transition to available alternatives and that these small-scale producers do not have much experience with the alternatives and need to convert their equipment to utilize the 3-Way method (1, 3-dichloropropene plus chloropicrin plus metham sodium) (US pers comm to MBTOC 14 July 2011). The nomination was therefore based on financial considerations and time for the adoption of alternatives.</p> <p>The Party stated that "<i>Decision IX/6(1)(a) is applicable because the US has determined that the specific use detailed in this CUN is critical because the lack of availability of methyl bromide for this use would result in a significant market disruption</i>". The Party reported that it had reduced nominations for the critical uses of methyl bromide for fruiting vegetables by 99% over the past nine years. However, MBTOC was uncertain that the unavailability of this relatively small amount of methyl bromide for vegetable production could result in a significant market disruption.</p> <p>The Party nominated on the basis that small-scale growers needed a period of time to adopt alternatives, as required in paragraphs 35 and 36 of Annex 1 to the Sixteenth Meeting of the Parties, by providing financial information for small-scale tomato growers in Georgia. MBTOC accepted that this was equivalent because of similar production systems for tomatoes and cucurbits in Georgia.</p> <p>The Party stated that there are currently no commercial fumigation/applicators for small-scale growers in Georgia, so growers must perform these applications themselves.</p> <p>MBTOC review and assessment</p> <p>MBTOC noted that the information provided was insufficient to determine whether the request for critical uses of methyl bromide complied fully with Decision IX/6 and other</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
		<p>relevant criteria, as:</p> <ul style="list-style-type: none"> The Party only provided financial information on the cost of converting the 3-Way system and not other chemical alternatives such as DMDS, MS, DMDS and PIC, DMDS and MS, PIC/ MS which are registered and available; The Party provided financial information relevant to tomato and not for cucurbit production. <p>In the circumstances of this nomination, and in light of the decision of the Party to not consume MB for critical uses after 2013 for the production of cucurbits, the lack of some information did not prevent MBTOC from making a recommendation on this nomination.</p> <p>MBTOC Comments on economics 2011: The CUN is based on economic and other arguments (see MBTOC review and assessment above).</p> <p>Comments requested in Dec. XXI/11 (para 9)</p> <ul style="list-style-type: none"> Dec. IX/6 b(i) Emission reduction: There was no information in the nomination about the use of VIF or equivalent film. However, a dosage rate of 150 kg/ha MB proposed in the nomination was consistent with the use of barrier films for nutsedge. The amount proposed for use in 2013 was 93% less than the amount approved by the Parties for use in 2012. Dec. IX/6 b(iii) Research program: The Party demonstrated that a research program was in place several years ago. Dec. IX/6 b(iii) Appropriate effort: The Party demonstrated that an appropriate effort has been made to evaluate and commercialise alternatives and substitutes. 											

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Eggplant	76.721	82.167	85.363	66.018	48.691	32.820	19.725	6.904	-	1.381	-	1.381
<p>MBTOC recommendation for 2013</p> <p>MBTOC recommends 1.381 tonnes of MB for small-scale (less than 4ha) eggplant production in Georgia (0.612 t) and Florida (0.769). MBTOC noted that the quantity (1.381 t) nominated by the Party was 80% less than the quantity (6.904 t) approved by the Parties in 2012.</p> <p>Nomination by the Party</p> <p>The Party informed MBTOC that the nomination is for one final year. The critical uses of methyl bromide allows time for some small-scale eggplant growers in Georgia and Florida to transition to available alternatives, with the remaining US producers of eggplant transitioning to alternatives in 2012 or previously. The Party stated a rate of 150 kg MB/ha would be used for soil borne fungi (<i>Phytophthora capsici</i>, <i>Fusarium</i> spp, <i>Pythium</i> spp, <i>Sclerotium rolfsii</i>), nematodes (<i>Meloidogyne</i> spp) and nutsedge control. This rate conforms to MBTOC's standard presumptions for application of MB under VIF for the control of nutsedge (150 kg/ha) and pathogens (125 kg/ha).</p> <p>Circumstances of the nomination</p> <p>The Party reported that farmers needed a period of time to transition to available alternatives. These small-scale growers do not have much experience with the alternatives and need to convert their equipment to utilize the 3-Way method (1, 3-dichloropropene plus chloropicrin plus metham sodium) (US pers comm to MBTOC 14 July 2011). The nomination was therefore based on financial considerations and time for the adoption of alternatives.</p> <p>The Party stated that "<i>Decision IX/6(1)(a) is applicable because the US has determined that the specific use detailed in this CUN is critical because the lack of availability of methyl bromide for this use would result in a significant market disruption</i>". The Party reported that it had reduced nominations for the critical uses of methyl bromide for fruiting vegetables by 99% over the past nine years. However, MBTOC was uncertain that the unavailability of this relatively small amount methyl bromide for vegetable production could result in a significant market disruption.</p> <p>The Party nominated on the basis that small-scale growers needed a period of time to adopt alternatives, as required in paragraphs 35 and 36 of Annex 1 to the Sixteenth Meeting of the Parties, by providing financial information for small-scale tomato growers in Georgia. MBTOC accepted that this was equivalent because of similar production systems for tomatoes and eggplants in Georgia and Florida.</p> <p>The Party stated that there are currently no commercial fumigation/applicators for small-scale growers in Georgia and Florida, so growers must perform these applications themselves.</p> <p>MBTOC review and assessment</p> <p>MBTOC noted that the information provided was insufficient to determine whether the request for critical uses of methyl bromide complied fully with Decision IX/6 and other relevant criteria, as:</p> <ul style="list-style-type: none"> • The Party only provided financial information on the cost of converting the 3-Way system and not other chemical alternatives such as DMDS, MS, DMDS and PIC, DMDS and MS, PIC/ MS which are registered and available; • The Party provided financial information relevant to tomato production in Georgia and not for eggplant production in Georgia and Florida; 													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
		<ul style="list-style-type: none"> A survey of famers using alternatives did not report any impact for eggplant producers of using alternatives on yield loss, cost increase or longer plant back interval (US pers comm to MBTOC 14 July 2011, Table 4p4) <p>In the circumstances of this nomination, and in light of the decision of the Party to not consume methyl bromide for critical uses after 2013 for the production of eggplant, the lack of some information did not prevent MBTOC from making a recommendation on this nomination.</p> <p>MBTOC Comments on economics 2011:</p> <p>The CUN is based on economic and other arguments (see MBTOC review and assessment above).</p> <p><u>Comments requested in Dec. XXI/11 (para 9)</u></p> <ul style="list-style-type: none"> Dec. IX/6 b(i)- Emission Reduction: There was no information in the nomination about the use of VIF or equivalent film. However, a dosage rate of 150 kg/ha MB proposed in the nomination was consistent with the use of barrier films for nutsedge. The amount proposed for use in 2013 was 93% less than the amount approved by the Parties for use in 2012. Dec. IX/6-b(ii)-Research program: This research is on going. However, specific studies known to MBTOC that have been conducted or are in progress were not cited in the nomination. Dec. IX/6-b(iii)-Appropriate effort: The Party demonstrated that an appropriate effort has been made to evaluate and commercialise alternatives and substitutes such as the 3-Way system and methyl iodide. 											

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Nurseries stock (fruit, nut, flower)	45.800	64.528	28.275	51.102	25.326	17.363	7.955	1.591	-	0.541 Revised 0.476	-	0.476
<p>MBTOC recommendation for 2013: MBTOC recommends 0.476 tonnes of MB for this use in 2013. This represents a reduction of 81% from previous amounts.</p> <p>The Party states that the requested amount is for those crops that require certification but do not move across controlled boundaries e.g. counties and cannot use the preferred alternatives such as 1,3-D due to township caps or on specific soil conditions. The treatment for crops such as fruit and nut trees and rose nurseries are required to meet certification standards for a crop that is in the ground for two years. Some portions of the crops in this sector are now produced in substrates and alternatives are used wherever possible. The target pest for certification is nematodes, but control of soilborne pathogens and weeds also impacts product quality.</p> <p>MBTOC comments on economics 2011: The same economic information is provided as in the previous year. CUN is not based on economic arguments</p> <p>Comments requested in Dec. XX1/11 (para 9)</p> <ul style="list-style-type: none"> • Dec. IX/6 b(i) Emission reduction: Yes. Barrier films cannot be used for this nomination in California, but rates conform to the standard presumptions. • Dec. IX/6 b(iii) Research program: Yes, An area wide program is evaluating the key alternatives, including methyl iodide/Pic. • Dec. IX/6 b(iii) Appropriate effort: A range of alternatives are being considered and commercialized. 													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Orchard replant	706.176	527.600	405.400	393.720	292.756	215.800	183.232	18.324	-	6.230	-	6.230
<p>MBTOC recommendation for 2013:</p> <p>MBTOC recommends 6.230 tonnes for this use in 2013. This includes 4.318 t for stone fruit, 0.213 t for raisins, 0.627 t for walnuts, 0.564 t for almond and 0.508 t for wine grapes. The CUN is for orchard/vineyard replant disorder of unknown etiology for a portion of replant sites in California where alternatives are not suitable or available (1,3-D) or where the data on the effectiveness of lower rates of methyl iodide (MI which is currently registered in California) are still being collected and effectiveness is not yet known.</p> <p>The Party states that alternatives are not available because of regulatory restrictions or physical characteristics such as unacceptable soil type, moisture or topography. The CUN is for heavy soils or soils which cannot be effectively treated to a sufficient depth to effectively use the reduced rates of 1,3-D now allowed in California. Regulatory constraints (maximum labelled rates) prevent the use of 1,3-D at the rates needed for effective kill of old roots and the associated pathogens in deeper soil. Although methyl iodide has been registered in California since December 2010 for replant, successful trials have only been reported with rates higher than registered (Browne <i>et. al.</i>, 2010; Schneider <i>et. al.</i>, 2005). Trials at the registered, lower, rates have been initiated. The best alternatives for orchard replant that have been identified are 1,3-D or 1,3-D with chloropicrin, and/or metham-sodium, especially in coarse-textured soils. Under certain soil and moisture conditions (less than 12% to 1.5 meters) 1,3-D is an effective management tool for replant problems and is currently used to replant the majority of orchard and vineyard sites.</p> <p>MBTOC acknowledges that the CUN is for a substantially smaller amount that is 34 % of the previously approved CUN. The Party confirms that MB/Pic 67:33 formulation is used for California stone fruit, raisin grapes, and wine grapes, and now as well for almond and walnut at a dose rate of 20g/m².</p> <p>MBTOC comments on economics 2011:</p> <p>The same economic information is provided as in the previous year. CUN is not based on economic arguments.</p> <p>Comments requested in Dec. XX1/11 (para 9)</p> <ul style="list-style-type: none"> ▪ Dec. IX/6 b(i) Emission reduction: No, high barrier films cannot be used in California due to regulatory constraints. Rates conform to the standard presumptions without barrier films. Rates conform to the standard presumptions with barrier films. ▪ Dec IX/6 b(iii) Research program: Yes, research effort has been conducted on alternatives. ▪ Dec. IX/6 b(iii) Appropriate effort: Substantial reduction indicates appropriate efforts. 													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Ornamentals	154.000	148.483	137.835	138.538	107.136	84.617	64.307	48.164	-	48.164	-	40.818
	<p>MBTOC recommendation for 2013:</p> <p>MBTOC recommends a reduced amount of 40.818 tonnes for this use in 2013. This includes 39.907 t for California (15% reduction from nominated amount) and 0.911 t for Florida (25% reduction from nominated amount). The 25% reduction for Florida recommended by MBTOC in its interim report of May 2011 was accepted by the Party. This was based on implementation of substrates, steam and uptake and improvement in MI technologies by 2013 and the registration time (and rate) for MI.</p> <p>The Party requested reassessment of MBTOC's recommended reduction for California by 15%, however MBTOC consider alternatives are available for this portion of the nomination and confirms the recommended 15% reduction for California</p> <p>The Party states that the nomination is for a large number of species, mostly grown in the field rather than in protected cropping. In Florida, the main species using MB are gladioli, lilies and snapdragon. Additional species using MB in California include alstroemeria, carnations, delphinium, gerbera, chrysanthemums, pompons, rose and others. There are several types of cut flower, foliage, and bulb crops grown each year and often several species are grown in the same field simultaneously. MB is needed to control diseases (e.g., <i>Fusarium</i> spp., <i>Pythium</i> spp., <i>Phytophthora</i> spp., and <i>Rhizoctonia</i> spp.), plant parasitic nematodes (e.g., root knot, root lesion, stunt and dagger), weeds (e.g. <i>Cyperus</i> spp., <i>Portulaca</i>, <i>Ambrosia</i> and others), and previous crop propagules. Methyl iodide (MI) was registered in Florida in 2009 and is in commercial use although some concerns on its applicability for widespread use on certain soil conditions remain (Kokalis-Burelle <i>et al.</i>, 2010; Rosskopf <i>et al.</i>, 2010 ab). The major issue with MI is the potential cultivar sensitivity and this requires more research with the many cultivars and flower crops produced. MBTOC considers other alternatives are available in Florida, such as 1,3-D/Pic or solarisation with chemicals (McSorley <i>et al.</i>, 2006 ab; McSorley <i>et al.</i>, 2008).</p> <p>MI was registered in California in December 2010. Recent preliminary studies in California indicate that low rates of methyl iodide are effective when used alone or in combination with consecutive application of other fumigants, such as metham sodium (Gerik, 2010) or metham potassium with or without VIF (Klose, et al 2007 ab; Klose et al 2008ab). Other studies with other chemicals, e.g. 1,3_D/Pic, metham sodium (Gerik et al, 2006; 2009; Klose et al, 2008ab; Elmore et al, 2007) also show efficient results. MBTOC considers that further uptake of non-chemical alternatives such as steam, solarisation and a combination of both (Gerik et al, 2010; Rainbolt et al, 2010; Fennimore, 2008; Fennimore and Goodhue, 2009; Gilbert et al, 2008; Samtani et al, 2010) is also possible. Steaming systems and application methods were evaluated in California and provided pest control statistically similar to hot-gas MB (Gilbert <i>et al.</i>, 2009; Rainbolt <i>et al.</i>, 2010). An IPM approach has been developed for ornamentals and is recommended by researchers in California (Elmore et al, 2007). MBTOC considers that all of the above alternatives can be used at least for part of the nomination and together can account for the proposed 15% reduction. Economic assessment of the costs of adoption of steam and other alternatives are needed to support this nomination.</p> <p>MBTOC comments on economics 2011:</p> <p>The same economic information is provided as in the previous year. CUN is not based on economic arguments.</p> <p>Comments requested in Dec. XX1/11 (para 9)</p> <ul style="list-style-type: none"> ▪ Dec. IX/6 b(i) Emission reduction: Yes, for part of the nomination. Barrier films are currently used in Florida. Barrier films cannot be used in California due to regulatory constraints. Rates conform to the standard presumptions with barrier films. ▪ Dec. IX/6 b(iii) Research program: Yes, research efforts have been conducted on alternatives. ▪ Dec. IX/6 b(iii) Appropriate effort: The nomination indicates significant efforts have been made to switch to alternatives. Substantial reduction indicates appropriate efforts particularly in Florida. In California, efforts have been made within the constraints imposed by regulations. 												

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Peppers (field)	1094.782	1243.542	1106.753	756.339	548.984	463.282	206.234	28.366	-	5.673 revised to 5.604	-	5.604
<p>MBTOC recommendation for 2013:</p> <p>MBTOC recommends 5.604 t of MB which was the nomination adjusted by the Party in July 2011. This was for small-scale (less than 4ha) peppers production in Georgia (0.189 t) and Florida (5.415 t) in 2013. MBTOC noted that this total quantity (5.604 t) was slightly less than the interim amount (5.673 t) recommended by MBTOC (TEAP May 2011) and in the nomination submitted in January 2011 for 2013. This quantity (5.604 t) was also 80% less than the quantity (28.365 t) approved by the Parties in 2012.</p> <p>Nomination by the Party</p> <p>The Party informed MBTOC that the nomination is for one final year. The critical uses of MB allow time for some small-scale pepper growers in Georgia and Florida to transition to available alternatives, with the remaining US pepper producers transitioning to alternatives in 2012 or previously.</p> <p>In its July 2011 response to questions from MBTOC, the Party informed MBTOC that it had withdrawn its previous 2013 nominations for the critical uses of methyl bromide in South East US (0.068 t, Alabama, Arkansas, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia), leaving the critical use of methyl bromide for the production of peppers by producers with less than 4ha located only in Georgia and Florida. The target pests were reported to be mainly nutsedge and nematodes. The Party stated a rate of 150 kg MB/ha would be used for both pathogen and nutsedge control. This rate conforms to MBTOC's standard presumptions for application of MB under VIF for the control of nutsedge (150 kg/ha) and pathogens (125 kg/ha).</p> <p>Circumstances of the nomination</p> <p>The Party reported that farmers needed a period of time to transition to available alternatives. These small-scale growers do not have much experience with the alternatives and need to convert their equipment to utilize the 3-Way method (US pers comm to MBTOC 14 July 2011) (1, 3-dichloropropene plus chloropicrin plus metham sodium). The nomination was therefore based on financial considerations and time for the adoption of alternatives.</p> <p>The Party stated that "<i>Decision IX/6(1)(a) is applicable because the US has determined that the specific use detailed in this CUN is critical because the lack of availability of methyl bromide for this use would result in a significant market disruption</i>". The Party reported that it had reduced nominations for the critical uses of methyl bromide for fruiting vegetables by 99% over the past nine years. However, MBTOC was uncertain that the unavailability of this relatively small amount methyl bromide for vegetable production could result in a significant market disruption.</p> <p>The Party nominated on the basis that small-scale growers needed a period of time to adopt alternatives, as required in paragraphs 35 and 36 of Annex 1 to the Sixteenth Meeting of the Parties, by providing financial information for small-scale tomato growers in Georgia. MBTOC accepted that this was equivalent because of similar production systems for tomatoes and peppers in Georgia and Florida.</p> <p>The Party stated that there are currently no commercial fumigation/applicators for small-scale growers in Georgia and Florida, so growers must perform these applications themselves.</p> <p>MBTOC review and assessment</p> <p>MBTOC noted that the information provided was insufficient to determine whether the request for critical uses of methyl bromide complied fully with Decision IX/6 and other</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
		<p>relevant criteria, as:</p> <ul style="list-style-type: none"> The Party only provided financial information on the cost of converting the 3-Way system and not other chemical alternatives such as DMDS, MS, DMDS and PIC, DMDS and MS, PIC/ MS which are registered and available; The Party provided financial information relevant to tomato production in Georgia but not for pepper production in Georgia and Florida; The Party reported the results of a survey of the impact (as measured by any yield loss, cost increase or longer plant back interval) of using alternatives to methyl bromide on pepper producers in Florida of -9% (US pers comm to MBTOC 14 July 2011, Table 7p7), which is within MBTOC's financial feasibility range for alternatives. MBTOC considers "...alternatives leading to decreases in gross margins of around 15 to 20 per cent or more as not financially feasible" (MBTOC 2010 Assessment). <p>In the circumstances of this nomination, and in light of the decision of the Party to not consume methyl bromide for critical uses after 2013 for the production of peppers, the lack of some information did not prevent MBTOC from making a recommendation on this nomination.</p> <p>MBTOC Comments on economics 2011: The CUN is based on economic and other arguments (see MBTOC review and assessment above).</p> <p>Comments requested in Decision XXI/11 (para 9)</p> <ul style="list-style-type: none"> Dec. IX/6 b(i) Emission Reduction: There was no information in the nomination about the use of VIF or equivalent film. However, a dosage rate of 150 kg/ha MB proposed in the nomination was consistent with the use of barrier films for nutsedge. The amount proposed for use in 2013 was 80% less than the amount approved by the Parties for use in 2012. Dec. IX/6 b(ii) Research Program: This research is on going. However, specific studies known to MBTOC that have been conducted or are in progress were not cited in the nomination. Dec. IX/6 b(iii) Appropriate Efforts: The Party demonstrated that an appropriate effort has been made to evaluate and commercialise alternatives and substitutes such as the 3-Way system and methyl iodide. 											

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Strawberry (field)	2052.846	1730.828	1476.019	1349.575	1269.32	1007.47 7	812.709	678.004	-	531.737	-	461.186
<p>MBTOC recommendation for 2013:</p> <p>MBTOC recommends a reduced amount of 461.186 tonnes for strawberry fruit in California for 2013. After reconsideration of further information from the Party, alternatives (1,3-D/Pic and Pic alone with or without barrier films), not restricted by regulations, are considered available to replace MB for specific uses, including <i>Macrophomina</i> and <i>Fusarium</i> in specific counties. MBTOC could not support an increase of its interim recommendation.</p> <p>Nomination by the Party</p> <p>The Party nominated 531.737 t on 3128 ha at a dosage rate of 170 kg/ha. The Party made a 21% reduction for uptake of methyl iodide on the amount approved at the MOP in 2012,</p> <p>Review process after OEWG</p> <p>At the 2011 OEWG, the interim MBTOC recommendation included an amount of 461.186 t that had been agreed by all MBTOC members. It was suggested by TEAP that MBTOC seek additional information from the Party to substantiate the additional 70.551 tonnes not able to use alternatives (1,3-D and Pic and their combinations). After the 2011 OEWG and at the request of the Party, MBTOC submitted to the Party the database with historical data on MB use and that of alternatives in the key strawberry growing regions of California.</p> <p>At the OEWG, MBTOC also requested the Party to provide further substantiation of the area not able to use alternatives, particularly in Ventura county where the MBTOC data did not correspond with those of the Party. In response, the Party identified that this was due to under-estimation of the reported MB use acreage (20 - 40% for MB use in Ventura, above the California PUR data) and to an increase in pressure due to diseases caused by <i>Macrophomina</i> and <i>Fusarium</i>, which according to the Party are not being controlled effectively with the available alternatives. Subsequently in response to 3 rounds of further questions from MBTOC, the Party provided further information by email and during a bilateral discussion via teleconference during MBTOC's second meeting in Holland. This information indicated that alternatives, which are not affected by regulations, were not effective on diseases caused by <i>Macrophomina</i> and <i>Fusarium</i>.</p> <p>MBTOC Assessment</p> <p>In subsequent review at its second meeting in The Netherlands, MBTOC concluded that it had already accounted for under reporting in its previous recommendations (CUE 2012 and interim recommendation for 2013) where it had increased the area needing MB by 13% above data reported in PUR. This was consistent with the calculated level of under reporting of fumigant use in the PUR database for all strawberry fruit growing counties in California.</p> <p>On the issue of diseases, MBTOC consulted further with the Party during the MBTOC meeting and concluded that 1,3-D/Pic and Pic may still be adopted further for some of the discrepancy in the area as the Party stated township caps were not maximised. Control of <i>Macrophomina</i> and <i>Fusarium</i> at the permitted dose rates for Pic has been shown to be adequate (http://ceventura.ucdavis.edu/Com_Ag/comveg/Strawberry/Diseases_741/)</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
		<p>http://ceventura.ucdavis.edu/Com_Ag/comveg/Strawberry/Recent_Meetings/Fumigants_4_11/?i=1, Koike, 2009, Koike <i>et al</i>, 2011a; Koike <i>et al</i>, 2011b; Koike <i>et al</i>, 2011c).</p> <p>In view of this, MBTOC cannot recommend additional MB for the part of the nomination related to Ventura. MBTOC considers the Party has not adequately described what chemical control efforts are being taken to address the <i>Macrophomina</i> and <i>Fusarium</i> issues. MBTOC will consider further information to substantiate any under reporting by growers in California that could be provided if the Party wishes to submit a supplementary nomination.</p> <p>It was the view of one MBTOC member present at MBTOC's second meeting that the Party had supported its nomination sufficiently, by correcting the number of hectares which had been mis-categorised and by substantiating the need for MB on area affected by <i>Macrophomina</i> and <i>Fusarium</i>, or which cannot use Pic due to regulatory constraints. Therefore this member held a different viewpoint.</p> <p>MBTOC Details of Assessment</p> <p>In California, the three major strawberry producing districts for which MB is nominated are Oxnard, Watsonville/Salinas and Santa Maria, which report in 2011 strawberry fruit production areas of, respectively, almost 4526 ha, 5882 ha and 4121 ha (CSC survey). The most recent PUR data (2003-2009) show that alternatives, namely 1,3-D, Pic and metham have been widely adopted in two of these production districts (i.e. excellent and sustained transition has occurred in Oxnard, some transition has occurred in Watsonville/Salinas and Santa Maria). State-wide in California, the MB use area has dropped to 5471 ha in 2009, down from 8806 ha in 2003. In California, 1,3-D use has more than doubled from 2,001 ha (2003) to 4,184 ha (2009), and Pic straight use from 1021 ha (2003) to 1705 ha (2009). In addition, the organic production acreage grew from 245 ha (2003) to 719 ha (2009).</p> <p>MBTOC considers that alternatives are available and effective, but understands that regulatory restrictions affect the use. Alternatives are implemented in areas with township caps in Ventura county. In this county, the production season is significantly shorter than that of Monterey county. In Monterey, drip application of 1,3-D and Pic, an alternative adopted in southern counties, results in incomplete protection against soil-borne diseases over the long production season due to unevenness of fumigant movement during application. MBTOC reiterates its 2010 suggestion that shank injection of 1,3-D/Pic by strip or broadcast application would result in improved disease control, but that township cap regulations impose a penalty on shank injection. MBTOC continues to urge the Party to reconsider the evidence that led to this regulation. The registration process of MI/Pic in California was completed successfully in December 2010, however MI/Pic use is restricted by buffer zones and dosage rate restrictions.</p> <p>Regulations in California allow the use of barrier films with alternatives but prohibit the use of VIF films with MB application, and therefore discourage reduction of MB dose rates as well as emission control through use of VIF. PUR use data for 2009 indicate that MB:Pic 57:43 formulations are used on 73% of the MB fumigated acreage, and that 50:50 formulations are used on 5% of the California use area. The Party has adopted a dose rate of 170 kg MB/ha in its CUN for 2013 which meets the standard presumptions. MBTOC encourages wider use of 50:50 formulations, which still allow for complying with regulatory restrictions on Pic use.</p> <p>MBTOC and the Party calculations of the critical area needing MB were similar for all strawberry fruit growing counties in California, except for Ventura, and this was the key difference in the amounts under consideration. Strip application of alternative fumigants in combination with varietal tolerance is as effective as MB for control of <i>Macrophomina</i> and <i>Fusarium</i> (Koike, 2009; Koike <i>et al</i>, 2011a; Koike <i>et al</i>, 2011b; Koike <i>et al</i>, 2011c).</p> <p>MBTOC notes and commends the withdrawal of MB for this use in Florida and Eastern USA, where full transition to alternatives has been completed.</p>											

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		<p>MBTOC continues to urge the Party to develop an action plan for California, particularly addressing the restrictions on the use of alternatives adopted elsewhere in the USA, and showing stepwise reductions to effectively progress the transition to MB alternatives.</p> <p>MBTOC comments on economics 2011: CUN includes a partial budget for the use of iodomethane by California strawberry producers, in addition to Pic+MB and 1,3D+Pic as in the previous year. CUN shows that the gross margin (termed net revenue in the CUN) declines from \$688 per hectare using methyl bromide to a loss of \$3889 per hectare using iodomethane and \$8042 using 1,3D+Pic, the latter two as a result of a yield loss 14% respectively. MBTOC cannot verify the accuracy of the data, but notes that UC Davis estimates the return to strawberry production in California as \$6,700 per acre, or more than \$16,500 per hectare (http://coststudies.ucdavis.edu/current.php).</p> <p><u>Comments requested in Dec. XX1/11 (para 9)</u></p> <ul style="list-style-type: none"> • Dec. IX/6 b(i) Emission reduction: In California VIF is not used with MB but is available for use with alternatives; • Dec. IX/6 b(iii) Research program: Yes, there is an on going research program, but specific data justifying CUN requests need to be provided. • Dec. IX/6 b(iii) Appropriate efforts: In California there is varying effort in the different production districts. 											

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Strawberry runners	54.988	56.291	4.483	8.838	7.944	4.690+ 2.018	6.036	3.752	-	3.752	-	3.752
<p>MBTOC recommendation for 2013: MBTOC recommends 3.752 tonnes for this use in 2013, This CUE recommendation is based on an area of approximately 19 ha at a rate of 20 g/m² in California.</p> <p>The Party stated that the amount applied for is lower than those required by the nematode certification program which specifies rates of 22.4 to 33.6 g/m² MB used on sandy and clay loam soils according to the of California Dept of Agriculture Nursery Inspection Procedures Manual No. 7. Studies in other nursery industries have shown that MI in combination with Pic and metham has given equivalent effectiveness for nematodes at rates of 336 kg/ha. Methyl iodide has been approved for nursery certification purposes, but the present rates required for certification (26 g/m²) are greater than those presently registered in California (10 g/m²). A major proportion (99%) of the hectares are exempted under QPS. The key pests previously stated as affecting strawberry runners are weeds (purple and yellow nutsedge), fungi (<i>Rhizoctonia</i> and <i>Pythium spp</i> in SE, <i>Phytophthora</i>, <i>Verticillium</i> in California), nematodes (root-knot, sting in CA). Alternatives evaluated in research trials over the past several years showed that 1,3-D/chloropicrin, 1,3-D/chloropicrin + metham-sodium, 1,3-D and metham-sodium, and dazomet as a follow-up application to 1,3-D/chloropicrin or chloropicrin (Fennimore <i>et al.</i>, 2008b) were very effective. These formulations have been shown to give similar pathogen control in soils and will meet requirements of certification (Kabir <i>et al.</i>, 2005; Fennimore <i>et al.</i> 2007, 2008; MBAO). However, regulations in California on the use of 1,3-D and chloropicrin restrict key alternatives used in some locations.</p> <p>MBTOC acknowledges that trials are now underway to evaluate efficacy of the lower registered rates for certified nursery use and approval and expect future nominations to update on trials with these products. Transition rates to MI have not been considered by the Party for this CUE. The CUN does not specify regions for use. MBTOC requests that a full review of trials with feasible alternatives (especially MI/Pic) be provided with future nominations as required under Decision IX/6.</p> <p>MBTOC comments on economics 2011: The same economic information is provided as in the previous year. CUN is not based on economic arguments</p> <p>Comments requested in Dec. XX1/11 (para 9)</p> <ul style="list-style-type: none"> • Dec. IX/6 b(i) Emission control: Yes in Florida and Eastern states, with use of VIF; No in California where VIF is not used; Rates conform to standard • Dec. IX/6 b(iii) Research program: Yes, on going research is being conducted showing that MI/Pic especially is effective, but it is not yet registered at rates suitable for certification in California. • Dec. IX/6 b(iii) Appropriate effort: No, trials have not been provided showing use of MI/Pic at lower rates. MI has qualified for certification use by CFDA, however it is not yet registered at suitable rates. 													

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United States	Tomatoes (field)	2876.046	2476.365	2065.246	1406.484	1003.876	737.584	292.751	54.423	-	10.741 revised to 9.107	-	9.107
<p>MBTOC recommendation for 2013:</p> <p>MBTOC recommends 9.107 tonnes of MB which was the nomination adjusted by the Party in July 2011. This was for small-scale (less than 4ha) tomato production in Georgia (0.776 t) and Florida (8.331 t) in 2013. MBTOC noted that the amount (1.634 t) reduced by the Party was a 15.6% reduction from than the interim amount recommended by MBTOC (TEAP May 2011) and the nomination submitted in January 2011 for 2013. This quantity (9.107 t) was also 83% less than the quantity (54.423 t) of methyl bromide approved by the Parties in 2012.</p> <p>Nomination by the Party</p> <p>The Party informed MBTOC that the nomination is for one final year. The critical uses of methyl bromide allows time for some small-scale tomato growers in Georgia and Florida to transition to available alternatives, with the remaining US tomato producers transitioning to alternatives in 2012 or previously.</p> <p>In its July 2011 response to questions from MBTOC, the Party informed MBTOC that it had withdrawn its previous 2013 nominations for the critical uses of methyl bromide in Maryland (0.015 t) and Delaware (0.129t) and in the South East US (1.633 t, Alabama, Arkansas, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia), leaving the critical use of methyl bromide for the production of tomatoes by producers with less than 4ha only in Georgia and Florida. The target pests were reported to be mainly nutsedge, nematodes and <i>Fusarium</i> wilt. The Party stated a rate of 150 kg MB/ha would be used for both pathogens and nutsedge control. This rate conforms to MBTOC's standard presumptions for application of MB under VIF for the control of nutsedge (150 kg/ha) and pathogens (125 kg/ha).</p> <p>Circumstances of the nomination</p> <p>The Party reported that farmers needed a period of time to transition to available alternatives. These small-scale growers do not have as much experience with the alternatives and need to convert their equipment to utilize the 3-Way method (US pers comm to MBTOC 14 July 2011) (1, 3-dichloropropene plus chloropicrin plus metham sodium). The nomination was therefore based on financial considerations and time for the adoption of alternatives.</p> <p>The Party stated that "<i>Decision IX/6(1)(a) is applicable because the US has determined that the specific use detailed in this CUN is critical because the lack of availability of methyl bromide for this use would result in a significant market disruption</i>". The Party reported that it had reduced nominations for the critical uses of methyl bromide for fruiting vegetables by 99% over the past nine years. However, MBTOC was uncertain that the unavailability of this relatively small amount methyl bromide for vegetable production could result in a significant market disruption.</p> <p>The Party supported the nomination on the basis of the need for a period of time for the adoption of alternatives by small-scale growers, as required in paragraphs 35 and 36 of Annex 1 to the Sixteenth Meeting of the Parties, by providing financial information for small-scale tomato growers in Georgia. MBTOC accepted that this was equivalent because of similar production systems for tomatoes in Georgia and Florida.</p> <p>The Party stated that there are currently no commercial fumigation/applicators for small-scale growers in Georgia and Florida, so growers must perform these applications themselves.</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
<p>MBTOC review and assessment</p> <p>MBTOC noted that the information provided was insufficient to determine whether the request for critical uses of methyl bromide complied fully with Decision IX/6 and other relevant criteria, as:</p> <ul style="list-style-type: none"> The Party only provided financial information on the cost of converting the 3-Way system and not other chemical alternatives such as DMDS, MS, DMDS and PIC, DMDS and MS, PIC/ MS which are registered and available; The Party provided financial information relevant to tomato production in Georgia and not for tomato production in Florida; The Party reported the results of a survey of the impact (as measured by any yield loss, cost increase or longer plant back interval) of using alternatives to methyl bromide on tomato producers in Florida of -8% (US pers comm to MBTOC 14 July 2011, Table 7p7), which is within MBTOC's financial feasibility range for alternatives. MBTOC considers "...alternatives leading to decreases in gross margins of around 15 to 20 per cent or more as not financially feasible" (MBTOC 2010 Assessment). <p>In the circumstances of this nomination, and in light of the decision of the Party to not consume methyl bromide for critical uses after 2013 for the production of tomatoes, the lack of some information did not prevent MBTOC from making a recommendation on this nomination.</p> <p>MBTOC Comments on economics 2011: The CUN is based on economic and other arguments (see MBTOC review and assessment above).</p> <p>Comments requested in Dec. XXI/11 (para 9)</p> <ul style="list-style-type: none"> Dec. IX/6 b(i) Emission reduction: There was no information in the nomination about the use of VIF or equivalent film. However, a dosage rate of 150 kg/ha MB proposed in the nomination was consistent with the use of barrier films for nutsedge. The amount proposed for use in 2013 was 93% less than the amount approved by the Parties for use in 2012. Dec. IX/6 b(iii) Research program: The Party demonstrated that a research program was in place several years ago. <p>Dec. IX/6 b(iii) Appropriate effort: The Party demonstrated that an appropriate effort has been made to evaluate and commercialise alternatives and substitutes.</p>													
Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Research (Both Soils & Commodities)									7.445	7.537	Withdrawn	Withdrawn
<p>MBTOC recommendation for 2013: The nomination was withdrawn in full by the Party</p>													

¹1ExMOP and 16MOP; ²16MOP+2ExMOP+17MOP; ³MOP17+MOP18; ⁴MOP18+MOP19; ⁵MOP19+MOP20; ⁶MOP20+MOP21; ⁷MOP21+MOP22; ⁸MOP22

4 Final CUN Report – Issues specific to MBTOC-Structures and Commodities

At the Open Ended Working Group in Montreal, in August 2011, MBTOC (SC) held bilateral meetings with Canada and the United States. The purpose was to discuss Parties' views concerning MBTOC SC's interim CUN recommendations, receive and provide additional information and discuss outstanding technical and economic questions. In the May TEAP report, MBTOC SC had been unable to assess one CUN for cured pork pending the receipt of research results. Additionally, MBTOC SC had been unable to assess some postharvest aspects of the US research CUN pending receipt of additional information. MBTOC SC indicated that it would conduct re-reviews of CUN decisions if Parties requested and provided additional information.

At the OEWG meeting and subsequent to it, the US indicated its request that MBTOC SC re-review its cured pork CUN, and provided new information about the timing of expected research. Later, additional information was sent to clarify the intended research for which the US was requesting MB. As a result, MBTOC SC was originally asked to re-review applications for the critical uses of MB for: US cured pork for 2013, US cured pork research for 2013, US research on postharvest emission control methods for 2012 and 2013; and US research on alternatives to QPS MB use for 2012 and 2013.

4.1. New process used by MBTOC SC to conduct CUN re-reviews

Following direction from TEAP advising that improvements in MBTOC processes were indicated, MBTOC Co-Chairs polled all MBTOC members in August asking them to indicate which CUNs they wanted to review, and reminding members that with that request comes the responsibility to review and be involved in much discussion and work as part of the review. As a result, one additional MBTOC QPS members also indicated an intention to be involved with the review of postharvest CUNs. (In addition to the four MBTOC QPS members also already involved in MBTOC SC.)

In its October 2010 TEAP report MBTOC SC indicated funding difficulties with members and because of that said MBTOC SC would hold only one meeting in 2011. This comment was repeated in the May 2011 TEAP report. As most MBTOC SC members continue to be inadequately funded for MBTOC travel, and knowing that a second meeting had not been planned in 2011, MBTOC SC agreed to conduct the re-reviews by email.

Accordingly, in August, after review and discussion amongst MBTOC members, the following process and timelines were agreed:

1. Prepare a situation analysis of the CUN re-reviews required in autumn 2011 (Aug 24).
2. Members to volunteer as CUN Review Team Leaders for each CUN. That person will update the B form if required with the new information from the Party.
3. Prepare a list of CUN documents available and send to members. This will include the CUN, B forms, situation analysis, correspondence to and from MBTOC, pertinent etc. Any member may contribute pertinent documents. (Aug 28)
4. Send the documents to any member who wishes to receive them. (Aug 29)
5. Ask members to send comments and propose recommendations on the CUNs. Consideration should be confined to technical and economic matters and should not stray into policy matters outside the direct instructions of TEAP and the Parties. All emails will be copied to all MBTOC members who have indicated they want to be involved in the SC CUNs. (begins Aug 29 – ends Sept 13)

6. Ask Review Team leader to propose the recommendation and the text box. (by September 19)
7. Circulate to all members and ask for sign off (Sept 20).
8. All members have to indicate in writing if they agree or not or if they propose changes to the text box. (Members were notified that if they did not respond in writing, the Co-Chair may call them at home.) Consensus will be defined as agreement or agreement to not block consensus. (by Sept 30)
9. In the instance of significant agreement but non-consensing members, MBTOC SC Co-Chair will attempt to obtain a compromise and/or will invite the member to prepare a minority report. (By Oct 5)

Following MBTOC SC's agreement to this process and timelines, the process was sent to the Ozone Secretariat and the USG since it was only their CUNs, which were being re-reviewed. USG agreed it was a reasonable and transparent process.

Two MBTOC members volunteered as review team leaders, documents from the Party were distributed, and situation analyses were prepared and sent out on time. Discussion amongst members was extensive and detailed. Draft recommendations and text boxes were then prepared and circulated to MBTOC SC on August 17. During the review period three members suggested text improvements which were agreed to by the other members and the pertinent review team leader.

When the text boxes were circulated, members were asked to indicate, in writing, whether they would agree, disagree or agree not to withhold consensus. By August 29, 13 of 15 members had indicated their agreement with the all the text boxes. Two members had not responded as of that time, but were still within allocated deadlines.

Then, on September 29 and within the time period for comment, one member made numerous comments, suggested changes and asked a question. On this date, another member asked a similar question which required an official regulatory interpretation from the US. A letter was sent to the US with the question.

On October 3, some changes to the text boxes were incorporated. With the exception of the text box awaiting the regulatory response from the US, the text boxes were circulated again, asking members to indicate whether they agreed, did not agree or agreed not to withhold consensus. Members started to respond. One MBTOC SC member, who had originally indicated his intention to review the CUNs, wrote at this time to say that because of a recent diagnosis of illness and the resulting need for treatment he would not be able review the CUNs after all. Consequently, he was not counted.

On October 5th the US government informed MBTOC that it now withdrew all its research CUN nominations.

Subsequently, MBTOC SC circulated the one remaining re-reviewed CUN and asked members to indicate whether they agreed, did not agree or agreed to withhold consensus. By October 7, 14 of 15 members had again sent written agreement to the text box. One member did not agree and indicated he would withhold consensus. That member was asked to draft a minority report.

4.1.1. Resourcing issues in 2011 and in coming years

Under Decision XV I/4 Annex 1, MBTOC was instructed to meet twice a year when making CUN recommendations to ensure it has full information and to allow Parties seeking CUEs to provide information after MBTOCs first review. At the time of that Decision, twice annual meetings were considered necessary to allow MBTOC to conduct re-reviews or to complete

reviews of CUNs. Parties can request a re-review if they disagree with MBTOC's first-review recommendations, and by providing additional information supporting their CUN.

However, when MBTOC has not been preparing an Assessment report and when Parties re-reviews have been few, MBTOC has occasionally met only once per year. Aside from those factors, the ability of MBTOC to meet is limited by the on-going lack of availability of funds for members' travel and subsistence. MBTOC SC met only once in 2011, and instead conducted its re-review by email. This was necessitated because of lack of funding by members, but also because just a few CUNs required re-review.

MBTOC draws the attention of the Parties to that the requirement that MBTOC meet twice a year in Decision XVI/4 Annex 16, may require further clarification in light of the reductions of CUNs, lack of funding of members, and that now, seven years after MOP 16, meetings can take place electronically.

In recent years, the number of CUNs has been reducing steadily, but it is unclear if this trend will continue if A 5 Parties begin to submit CUNs in 2013. Another unknown factor that will affect resourcing is that initial CUN submissions take more time to review; Parties in their initial submissions, have difficulty understanding the information requirements for critical use nominations and necessary information may not be available. MBTOC may be unfamiliar with the specific circumstances of the CUN.

If several new CUNs are submitted, and if there are difficulties understanding requirements and sourcing information, MBTOC will require two meetings a year. Furthermore, more MBTOC members will need funding to attend the OEWG meeting for discussions with Parties that seek any clarification on the interim recommendation by MBTOC.

If, on the other hand, few CUNs are submitted, MBTOC may only need to meet once per year or conduct their reviews entirely by email. It may also happen that very few CUNs are submitted in 2012, with an increase in 2013 and 2014 if A 5 Parties start to submit CUNs.

Parties may need to change resourcing for MBTOC and its members during this upcoming time period.

4.2. Details of evaluations

In January of 2011, Parties submitted six CUNs for the use of MB in structures and commodities in 2011. In addition, three aspects of the US research CUN pertained to postharvest uses of MB; one for cured pork, one for emissions control research and one on alternatives to QPS treatments. Each of the research CUNs were requested for both 2012 and 2013.

In the May TEAP report, MBTOC SC evaluated the six CUNs, giving recommendations for five of the CUNs and recommending one part of the US research CUN. Specifically, in May, MBTOC was unable to assess the 2013 cured pork CUN because commercial scale trials with phosphine were being conducted and MBTOC thought the research results might be available in the summer. However, the US informed MBTOC that data collection would continue until late in 2010, and MBTOC found this to be consistent with its understanding and prior investigation of the long processing and storage required of this processed meat. Additionally, in May, although MBTOC was able to recommend the 2012 cured pork research CUN, it was unable to assess the remaining postharvest aspects of the US research CUN because further information from the US was pending.

However, in October 2011, the US informed MBTOC that it was withdrawing its entire US research CUN (pre-plant and post-harvest aspects), including the cured pork research aspect recommended in May.

The final total MB volume nominated in 2011 for post-harvest uses, (and excluding the US research CUN which was withdrawn by USG), was 43.425 tonnes. Of nominations in 2011 for 2013, MBTOC recommended 43.425 tonnes (Table 4-1)

Table 4-2 provides the MBTOC-SC interim recommendations for the CUNs submitted.

4.3. Minority report USA nomination for the critical use of MB for cured pork

Signed by Tom Batchelor.

The US submitted a nomination for 3.730 tonnes of methyl bromide for critical uses in cured pork facilities in 2013. Methyl bromide is used in this sector to control pests such as beetles and mites “... *that infest and feed on meat, especially deep inside the meat along the bone, as it cures and ages. Food commodities that exceed the US Food and Drug Administration’s maximum limits for live or dead insects or insect parts that may be present in stored food products are considered adulterated and unfit for human consumption.*”³

Availability of alternatives

The Party reported in its 2006 nomination that of more than 1,650 pork production facilities in the United States approximately 850 of them required the use of methyl bromide to fumigate dry cured pork products⁴. The Party reported in its 2007 nomination that 45 facilities required the use of methyl bromide, which is about 5% (45/850) of the facilities that previously required this fumigant. The reduction in use was attributed by the Party to modifications to the curing facilities and their surroundings⁵, sanitation improvements and IPM measures⁶. In the 2011 the Party stated that the cured pork sector “... *has no known chemical alternative available to eliminate the use of methyl bromide*” and as a result “*the need for fumigation has not been eliminated*”⁷.

The Party did not provide information in 2011 on the infeasibility of the implementation of non-chemical alternatives in about 5% of the cured pork facilities over the past 4 years. A chemical alternative, while potentially useful, is therefore not necessary to replace methyl bromide as non-chemical alternatives have replaced its use in about 95% of the facilities.

The Party did not provide information in 2011 to demonstrate that there are no technically and feasible alternatives or substitutes available to the user that are acceptable from the standpoint of environment and health and that are suitable to the circumstances of the nomination, as required by paragraph 1(a) of Decision IX/6.

Minimisation of use and emissions of methyl bromide

The dosage of methyl bromide proposed by the Party for use in cured pork facilities in 2013 of 20 gm⁻³ was much higher than minimum dosages of 11-13 gm⁻³ that were provided in previous nominations⁸. In addition, the Party did not provide sufficient information on gas tightness of cured pork facilities in 2011 or earlier nominations. When considering the use of potential

³ ExI/4(3): The [US National Management Strategy](#) (2009). Page 13

⁴ 2006 Nomination, page 9

⁵ 2008 Nomination, page 9

⁶ 2008 Nomination page 7; 2011 nomination page 4

⁷ 2011 Nomination, page 4

⁸ 2006 nomination

alternatives in existing facilities, the Party stated that “...structures are not air tight” (which would also apply to the use of methyl bromide) and that “several companies have modified their buildings to make them more gas-tight”.

The Party did not demonstrate that all technically and economically feasible steps have been taken to minimise the use (dosage) and emissions (gas tightness) of critical uses of methyl bromide, as required by paragraph 1(b) of Decision IX/6.

Deployment of alternatives and substitutes

The Party reported in 2011 that the 3-year research programme on alternatives to methyl bromide was due to end in 2010, but it had been extended at no additional cost by one year to 2011 mainly because of the need to undertake further trials on phosphine. In addition, research on “the effectiveness of using phosphine in dry cured ham facilities is planned for the future (if funding is obtained)”. The Party reported uncertainty with further funding after 2011, and therefore did not demonstrate that a research programme is in place to deploy alternatives and substitutes, as required by paragraph 1(b) of Decision IX/6.

Treatment of products with methyl bromide that contain fat

The US reported that cured pork is fumigated one to five times per year depending on pest pressure in the cured pork facility⁹.

In general methyl bromide is readily absorbed by lipid materials and care should be taken to avoid contamination of high fat content foods such as butter, cheese, margarine and meat¹⁰. The US does not recommend methyl bromide fumigation of products containing butter, lard or fats¹¹. Residual methyl bromide normally desorbs relatively quickly from non-fat products, but it is not readily desorbed from fat products. Previous research showed that methyl bromide can be detected up to 3 months after fumigation in refrigerated storage¹². Methyl bromide is an alkylating and mutagenic agent. India has banned the use of methyl bromide on butter, lard or fats¹³.

The use of methyl bromide should not be recommended by MBTOC and TEAP for use on cured pork which is a product that contains fat.

Categorisation as “Unable to Assess”

The 2011 nomination by the US for the critical use of methyl bromide for cured pork in 2013 was categorised as “Unable to Assess” when initially assessed in 2011 by MBTOC (TEAP May 2011).

TEAP is requested to retain the categorisation of “Unable to Assess” as insufficient information was provided in 2011 to make a final assessment¹⁴. Where information was provided, the nomination did not “... adhere with each criterion set out in Decision IX/6(1)(a)(ii) and (b)(i) and (b)(iii) and other relevant decisions of the Parties, as required by Dec XXI/11(9). Methyl bromide requested for this purpose should therefore not be considered as ‘critical’ as it does not

⁹ 2007 Nomination, page 18

¹⁰ Bond. 1984. Manual of fumigation for insect control. FAO Plant Production and Protection Paper No 54. [FAO Website](#).

¹¹ US. 2010. USDA-PPQ-Treatment Manual. [2-9 Chemical Treatment--Fumigants--Methyl Bromide--Closed-door Container Fumigation](#)

¹² Rhodes et al. 1975. Exposure of meat to methyl bromide during refrigerated-store pest control; residues in beef and lamb and effect on quality. J. Food Sci. of Food and Agric., 26(9): 1375-1380.

¹³ Government of India. 2005. Quarantine treatment and application procedures: I. Methyl bromide fumigation. NSPM 11. Fumigation Forbidden commodities. Pp18-19.

¹⁴ Annex to Decision XVI/4 (Annex 1 of the Report of MOP16)

comply with the criteria that have been defined by the Parties for the ‘critical uses of methyl bromide’.

Table 4-1. Summary of the final recommendations by MBTOC-SC (in square brackets) for CUE’s for postharvest uses of MB (tonnes) for 2013 submitted in the 2011 round.

Country and Sector	MBTOC Recommendation (tonnes)
Australia. Packaged rice	[2.374]
Canada. Mills	[7.848]
Japan. Fresh chestnuts	[3.317]
USA	
1. Commodities	[0.822]
2. Mills and food processing structures	[25.334]
3. Cured pork	[3.730]
Total	[43.425]

Table 4-2. Final evaluations of CUNs for structures and commodities submitted in 2011 for 2013

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
Australia	Rice	6.150	6.150	.205	9.200	7.820	6.650	4.87	3.653	-	2.374	-	2.374
<p>MBTOC comments 2011:</p> <p>MBTOC recommends 2.374 tonnes of MB, the amount nominated by the Party, for use on packaged rice in 2013. This represents an approximate 35% decrease over the amount of MB granted by the Parties for this use in 2012. MBTOC had until that point noted that the Australian rice applicant had not adopted alternatives in spite of the availability and use of technically effective alternatives in Australia and worldwide. MBTOC notes, however, that the treatment of packaged rice with sulfur fluoride, one of the alternatives in use elsewhere, is not registered in Australia.</p> <p>The Party indicates that the applicant is pursuing the adoption of phosphine. In mid-2010, Australia submitted a new CUN and phase out plan nominating a 25% reduction for its 2010 submission and also for each following year with the result that in 2015, there would be no further MB CUN nomination. The Party indicated that regardless of the volumes of rice harvested or the continuation of drought, this phase out plan would be required of its rice applicant. MBTOC continues to note that it does not seem that the applicant has adopted alternatives, but with the recent improvement of water availability in the growing region, rice harvests for 2011 are expected to improve significantly and that therefore it seems likely that alternatives will be adopted.</p> <p>The Party has noted some difficulties in achieving the level of technical efficacy required by its applicant; MBTOC has volunteered to assist by providing a summary of research of efficacy of sulfur fluoride for the pest species of concern. MBTOC's summary of pertinent research of interest to Australia and any Party with similar concern can be found in the MBTOC/TEAP Progress Report of May 2011.</p> <p>Emission Reduction: Yes. The applicant now sends the majority of its MB-fumigated rice through MB recapture equipment.</p> <p>Research Program: Trials with sulfur fluoride are ongoing; the applicant says further work is needed to see if results can be improved. MBTOC notes, however, that there is already extensive research available on the efficacy of SF against the pests of concern and has provided a summary in the Progress Report. A research project in 2009 was interrupted due to the unfortunate death of the scientist in charge.</p> <p>Appropriate effort: As with all postharvest registration issues, neither the applicant nor the Party mandated with Montreal Protocol nominations has control over pesticide registration. This applicant has not made appropriate efforts to adopt alternatives, since no alternatives have been adopted in spite of registration of technically effective and affordable alternatives being available. MBTOC agrees with the Party that its new phase out plan will likely result in the applicant adopting alternatives soon as harvest quantities are expected to increase and MB availability has decreased.</p> <p>MBTOC comments on economics 2011:</p> <p>Applicant argues that phosphine fumigation, following milling but before packaging, is the best technical and economical alternative, and is therefore gearing up to transition to phosphine.</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
Canada	Mills	47 (included mills and pasta)	34.774	30.167	28.650	26.913	22.878	14.107	11.020	-	7.848	-	7.848
<p>MBTOC comments 2011:</p> <p>MBTOC recommends 7.848 tonnes, the amount nominated by the Party for use in mills in 2013. This is an approximate 29% decrease over the amount granted by the Parties for 2012. The Party advises that mills that are producers of durum semolina or have integrated/contiguous bakery mix plants and those that are particularly large structures are the remaining methyl bromide users. The CUN states that the amount requested is only sufficient for a single treatment of 7-8 of the 17-18 mills in the application, so most mills would not be fumigated in 2013. As per Canadian regulation, mills which are listed in the CUN may, if necessary, share some of the total CUN amount granted so that is why more mills are listed than will actually be fumigated. The 2011 CUN includes at least one less mill than in 2010, due to adoption to alternative treatments such as heat.</p> <p>Evaluation of alternatives to methyl bromide in progress include: heat treatments; the just recently registered ECO₂Fume formula (carbon dioxide and phosphine mixed in gas cylinders), sulfuryl fluoride (SF) (but only if there is no food contact); plus integrated pest management programs alone or in combination with heat treatments and fumigations with the aforementioned alternative fumigants.</p> <p>Current research is directed towards practical trials with heat and other IPM upgrades, and SF. The results of current trials on a principal alternative, SF, have indicated poorer than expected efficacy, probably because adequate temperatures are not being maintained and the vulnerability of concentration level maintenance in windy conditions. Additionally, SF, at the applied dose, has been found to be less effective for the eggs of red flour beetle than for confused flour beetle. This is significant because red flour beetle is the pest of most concern in Canadian mills yet confused flour beetle is the most commonly used species in trials.</p> <p>For all alternatives, the recent tightening of food safety regulations in Canada has increased the pressure to raise the already high efficacy levels of treatments to eliminate pests. Mills have to operate according to a "Required efficacy" standard which in Canada means no live insects, including eggs, in milled grain product fractions leaving the mill for customer destinations. There is intensifying regulatory pressure in North America to improve food safety by eliminating all human pathogens, contaminants and stored product pests from food ingredients and processed foods.</p> <p>The Party advised MBTOC that a number of mills are acquiring heat treatment equipment in 2010 and 2011 with the expectation to completely phase out MB use by 2012. Other mills are still having difficulty in achieving the required efficacy through use of alternatives. Until problems can be resolved commercial adoption of SF will be delayed, even if registration is eventually extended beyond empty structures. There is registration of SF for empty facilities but the widening of this registration originally expected in the summer of 2009 was not achieved as of March 2011.</p> <p>Heat treatments may also be somewhat less successful than conventional MB fumigations, particularly as the size of the structure increases. Some areas of each structure act as "heat sinks" that absorb large amounts of heat, rendering them difficult to heat to the temperature and for the duration required to kill all life stages of insect pests. Complete evaluation of the heating requirements for any single milling facility is a process of trial and error, unique to each site and one that takes time to complete.</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
		<p>The CUN summarizes that, treatment with SF or the heat and phosphine combination treatment (phosphine, heat and carbon dioxide) controlled insect populations in flour mills for over 18 weeks. In the nine treatments, only once did the next fumigation need to be scheduled earlier expected (Fields, 2007).</p> <p>Emission control: The majority of mills are now not even fumigated annually, which reduces emissions.</p> <p>On going research: – Excellent research multi-mill, multi-stakeholder research program in past with several full reports submitted to MBTOC (SF, heat and DE, SF and elevated temperature, phosphine + CO₂, etc.). Research has not been reported in past two years; MBTOC is not convinced that further research in this field is absolutely necessary. When mills are not MB fumigated, they are being heat treated and all are now in enhanced IPM.</p> <p>Appropriate effort in the CUN: Full registration of SF has not been achieved; there is still no food tolerance for F residues from SF treatment of mills. This action has been delayed for several years and hinders ability to fully adopt SF as an alternative treatment. Neither the millers nor the Party can affect fumigant registration. In spite of delay in achieving full registration, the mills are continuing to make progress.</p> <p>MBTOC comments on economics 2011:</p> <p>CUN states that the transition to heat treatment or enabling structural modifications such as replacement of wooden floors and exterior wall cladding and insulation to reduce insect harbourage, which require capital investment, is negatively affected by the economic downturn. However, the purpose of the phase-out is to permit a gradual economic adjustment in the absence of federal or provincial government financial assistance programs.</p>											

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
Japan	Chestnuts	7.100	6.800	6.500	6.300	5.800	5.400	5.35	3.489	-	3.317	-	3.317
<p>MBTOC comments 2011: MBTOC recommends 3.317 tonnes of MB, the amount nominated by the Party for fresh chestnuts in 2013. This is a 5% reduction over the amount of MB granted by the Party for this use in 2012.</p> <p>As a result of its research program, Japan determined that methyl iodide (MI) would be an effective alternative to the use of MB in fresh chestnuts. It was registered in 2009 and an MRL for methyl iodide residues in food was later established (0.5ppm), which allowed for the use of MI. However, the registration did not result in the immediate commercial availability of the fumigant. The registrant of MI in Japan has a product stewardship program which requires more stringent and modern application methods for MI than are required for MB, which was an older process. The registrant had to first design filling and packaging systems to make the fumigant available for its different applications. The registrant then investigated current fumigation practises as a prerequisite to beginning training in the safe use of the fumigant according to multinational standards of fumigation practise.</p> <p>The additional stringency has resulted in the requirements for the building of better containment fumigation chambers, among other things. These more stringent requirements for the safe use of MI, plus the training requirement, have resulted in the need for more time to complete the adoption. The Party is still establishing technically effective methods to use MI in fumigation consistent with their requirements for 2 hour fumigation times required in periods of peak harvest.</p> <p>The CUN notes that Japan will have completely transitioned this use to MI by the end of 2014. The amount of MB requested by the Party is consistent with the phase out plan leading to zero use of methyl bromide in 2015. MBTOC asks if Japan has established an MRL for iodide.</p> <p>Emission reduction: To date regular reductions in MB use through logistical improvements. Consolidation of fumigation loads also reduces emissions.</p> <p>Research program in past 12 months: Extensive research program has been completed, no further research needed other than to see if reduced dosage of MI can be achieved, and that is optional. There is established efficacy of MI for this purpose in Japan and it has been registered.</p> <p>Appropriate effort:? Registration for methyl iodide proceeded as per normal and was registered after appropriate review. Now extensive effort is required to change logistics and treatment facilities to allow the safe use of methyl iodide as per multi-national fumigation standards.</p> <p>MBTOC comments on economics 2011: The nomination was not based on economic arguments.</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Commodities	89.166	87.719	78.983	58.921	45.623	19.242	5.000	2.419	-	0.822	-	0.822
<p>MBTOC comments 2011:</p> <p>MBTOC recommends 0.822 tonnes, the amount nominated by the Party for MB treatment of dried fruit, walnuts and dates in 2013. This represents a 66% reduction over the amount granted by the Parties for use in 2012. The USG has nominated a very challenging decrease in MB use for this sector, which MBTOC supports. If it were to be provided, a phase out plan would inform MBTOC and Parties of the continued timing of its transition to alternatives.</p> <p>MBTOC notes that logistical improvements and investments may be needed which could lead to the adoption of cold storage for the post-drying processing of dried fruits which could assist this sector to phase out of MB entirely. We would expect that any further commodities CUN would not include dried plums since they should be protected from post-process re-infestation with treatments other than MB.</p> <p>Additionally, MBTOC notes that controlled atmosphere treatment would provide an effective non-chemical treatment for all the commodities in this CUN. Parties may find the section on controlled atmosphere treatment and associated tables found in the Structures and Commodities Chapter of the MBTOC Assessment Report to be helpful in understanding controlled atmosphere. Transition to controlled atmosphere might be additionally useful given the US Environmental Protection Agency regulation which proposes to phase out the use of SF for food contact. This is particularly significant given that the CUN, which was prepared before the announcement of the proposed regulation, reports that the sector is moving to SF. If the US government phases out the use of SF on foods, it may delay the transition to alternatives, since the use of SF has assisted this transition.</p> <p>Emissions reduction: This sector has very considerably reduced use of MB, and therefore emissions. Fumigation takes place in chambers or suitable enclosures.</p> <p>Research effort: Research on dates is ongoing but focused on the use of sulfuryl fluoride. The US Environmental Protection Agency has proposed phasing out the use of SF for foods and so MBTOC does not know if this proposed regulation will affect research or adoption of alternatives.</p> <p>Appropriate effort: Several alternatives are already registered. Also controlled atmosphere could be used.</p> <p>MBTOC comments on economics 2011:</p> <p>Walnuts: The CUN provides a detailed financial analysis in the form of a partial budget of the cost of fumigating walnuts with methyl bromide, with sulfuryl fluoride, and with phosphine. SF results in an increase in gross margin because the price per unit is lower, even though the dosages applied are higher. Phosphine requires capital investment in fumigation chambers in the first year because of the longer fumigation time and the danger of missing a market window, but thereafter is cheaper to use as the unit cost is lower than that of methyl bromide. The full cost of the fumigation chambers is charged in the first year.</p> <p>Dried fruit: The CUN shows that treatment with SF results in a higher gross margin, and that treatment with phosphine, while resulting in a lower gross margin in the first year because of the need to provide fumigation chambers, will in later years also lead to a higher gross margin.</p> <p>Dates: SF is the only technically feasible alternative in dates, and the CUN shows that its use results in an increase in gross margin.</p> <p>The CUN is not based on economic arguments, but on the need for a phase-out period.</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Mills and processors	483.000	461.758	401.889	348.237	291.418	291.418	173.023	74.510	-	25.334	-	25.334
<p>MBTOC comments 2011</p> <p>MBTOC recommends 25.334 tonnes, the amount recommended by the Party for use in food processing structures in 2013. This represents a 66% reduction in the amount granted by the Parties in 2012. This CUN includes amounts for three sectors and the recommendation is divided as follows: for rice milling, 2.467 t; for pet food facilities .004665 t; for mills 18.201 t. The USG has nominated a very challenging decrease in MB use for this sector, which MBTOC supports. If it were to be provided, a phase out plan would inform MBTOC and Parties of the continued timing of its transition to alternatives.</p> <p>This nomination is for facilities, or portions of facilities, that are unsuitable for the alternatives, or where the alternatives are not economically feasible. USG is requesting methyl bromide for this sector to allow time for the industry to purchase equipment, modify structures, and/or practice using alternatives.</p> <p>The lethal effects of sulfuryl fluoride (SF) are highly dependent upon temperature. The Party reported that, should a facility need fumigation during cold temperatures, this chemical may not be a cost-effective solution because of the requirement to use supplemental heat and additional dosage. SF requires higher dosages to kill the eggs of structural pests than for other life stages. Phosphine, although it is used in combination with heat and CO₂ in some Canadian mills, can be corrosive to many metals that are present in facilities, especially in the computers and other electronic process control instrumentation.</p> <p>There is some confusion as to the commodities that may be directly fumigated with SF. According to the SF label in the US, pet food is not listed as a material approved for direct treatment. If not on the label the commodity can not be treated, leaving the question of incidental fumigation if the structure is treated with SF. This “incidental” fumigation of commodities inside a food processing structure has resulted in problems with label interpretation. Some companies insist that all pet food products would need to be removed from treatment areas or sufficiently protected to prevent the formation of residues of SF and fluoride ion on the pet food products. This is also a factor for mills that produce mixes with multiple ingredients (e.g. cake mixes, muffin mixes, etc.).</p> <p>The industry reports that complete removal of non-sulfuryl fluoride treatable ingredients and product from the target facility would present significant logistical challenges, including multiple forklifts and forklift drivers, plus rented truck trailers onto which the ingredients could be loaded. These trailers would then be removed from the facility, most likely to available space in the parking lot. This process that would add labour and trailer rental costs as well as costs associated with additional downtime needed to accomplish the ingredient removal task.</p> <p>Heat is dependent on several parameters: the structural composition, as different building components expand and contract at different rates; the building design/layout factors, which affect the ability to evenly distribute heated air; and the availability of convenient and economical sources of heat. Facilities constructed primarily from wood, which the CUN reports comprise about 25 per cent of the flourmills in the U.S., may not be able to use heat because of warping of the wood. Some areas of each structure act as “heat sinks” that absorb large amounts of heat, rendering them difficult to heat to the temperature and for the duration required to kill all life stages of insect pests. In addition, heat may not be a viable option for structures where a variety of heat-sensitive food products or commodities are also present. There is also a high initial investment to purchase explosion-proof heaters, modify sprinkler systems, and educate personal on heat treatments.</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
		<p>In spite of the availability of heat treatment methods, the US structural sector has largely relied on transition to SF as it reduced MB use. The current registration of SF remains unchanged in the US for the uses in this nomination. Greater transition to the use of heat treatment might be useful given the US Environmental Protection Agency regulation which proposes to eventually phase out the use of SF for food processing structures. If the US government phases out the use of SF for food processing structures, it may delay the transition to alternatives, since the use of SF has assisted this transition.</p> <p>Emission reduction: The sector has widely adopted SF which requires greater attention to sealing and so if MB is also used emissions would be reduced.</p> <p>Research effort: No new research reported, but research is not needed. Instead trials and adaptation of known methods are needed at the individual mill sites.</p> <p>Appropriate effort: As with all postharvest registration issues, neither the applicant nor the Party mandated with Montreal Protocol nominations has control over pesticide registration. Many of the companies formerly associated with this CUN have switched to alternatives and/or decreased their use of MB.</p> <p>MBTOC comments on economics 2011:</p> <p>Pet food facilities: The CUN provides a partial budget that shows that heat treatment in the first year will result in a decline in the gross margin of 0.05%. In the years after the initial investment the result will be an increase in the gross margin of 0.02%. In the budget provided, the capital cost is charged to the year of investment.</p> <p>Mills and other food processors: The CUN identifies SF and heat treatment as the best technical alternatives, and provides a partial budget showing the economic impact of these two alternatives. In the case of heat treatment, the capital costs are again charged to the first year. The use of SF results in a decline of 0.01% in gross margin, while heat treatment, taking into account the capital costs, results in a decline of 0.13%. Once the capital costs have been charged, gross margin increases by 0.14%.</p> <p>The CUN is not based on economic arguments, but on the need for a phase-out period.</p>											

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
United States	Cured pork	67.907	40.854	18.998	19.669	18.998	4.465	3.73	3.730	-	3.730	-	3.730
<p>MBTOC comments 2011</p> <p>MBTOC recommends the nominated amount of 3.730 tonnes, for use in the cured pork sector in 2013. This is the same amount granted by the Parties for this use in 2012.</p> <p>In May 2011 (TEAP, May 2011) MBTOC had been unable to assess the USG cured pork CUN for 2013, pending the receipt of research results. However, USG has now indicated the research timeline, followed by the regulatory requirements; MBTOC has also reviewed the production cycle for Southern cured pork with its very long storage requirements. As a result of this new information and analysis, MBTOC can recommend the nominated amount. The cured pork sector has been improving the gas tightness of its fumigated pork storage facilities; as with all MB CUN uses, MBTOC reminds Parties that MB can only be used in fumigation rooms of good gas tightness and using best fumigation practises.</p> <p>The CUN reported that investigators achieved 100 % mortality of all life stages of red-legged ham beetles and ham mites with 48 hours exposure of 400 and 1000 ppm of phosphine, respectively (Phillips, 2009). In addition, residual phosphine concentrations in dry cured hams that were fumigated for 48 hrs at 1000 ppm were below 0.01 ppm, the legal residual limit in stored food products (Sekhon, et al. 2009b; Sekhon et al., 2010c), and consumer panellists could not detect differences between control and phosphine fumigated samples at 1000 ppm (Sekhon et al. 2009b; Sekhon et al., 2010c). Therefore, phosphine can be regarded as a potential alternative to methyl bromide for controlling arthropod pests of southern dry cured hams.</p> <p>Further testing with a greater number of mites has indicated that with heavy mite infestations, phosphine at 1000 ppm over 48 h does not achieve complete control. A programme of tests to scale up the proposed phosphine treatment to nearly commercial scale is being conducted summer and autumn of 2011 (and likely in 2012) to determine the efficacy of using phosphine at the plant level. The CUN noted that the effectiveness of phosphine will next be evaluated through the use of both bioassays (with ham present) and on hanging hams in a simulated dry cured ham aging room. This research will include the economic analysis of using phosphine in comparison to methyl bromide, with respect to its efficacy in eradicating mites. The Party reports that researchers will not complete data collection until November or December of 2011, with analysis to continue into early 2012. Additional items that will be researched in the future (if funding is obtained) include the effect of multiple fumigations on the sensory quality and residual concentration of phosphine in ham, and the effectiveness of using phosphine in dry cured ham facilities. Many processors have indicated that they would be willing to help evaluate the efficacy of phosphine (at controlling ham mite infestations) in their plant as part of a research project, which demonstrates the willingness of the industry to do everything that they can to help determine if potential alternatives to methyl bromide exist.</p> <p>MBTOC notes that earlier research (Bowley and Bell, 1981) has indicated that better results may be obtained by conducting two fumigations with phosphine separated by an interval dependent of ambient temperature. This allows tolerant eggs to resume development and hatch before the second exposure. USG is also encouraged to investigate other treatment options should the phosphine research not be successful.</p> <p>The USG has indicated in correspondence that phosphine is registered for use on processed meats, which would include cured pork. MBTOC notes the Degesch America Phostoxin® (aluminium phosphide) and Fumicel® (magnesium phosphide) labels in the US lists processed meats if maximum residue limits do not exceed 0.01ppm. The Horn Diluphos Fosfoquim label also lists processed meats with the same maximum residue limits.</p>													

Country	Industry	CUE for 2005 ¹	CUE for 2006 ²	CUE for 2007 ³	CUE for 2008 ⁴	CUE for 2009 ⁵	CUE for 2010 ⁶	CUE for 2011 ⁷	CUE for 2012 ⁸	CUN for 2012 (Addtl or new)	CUN for 2013	MBTOC rec. for 2012 (addtl or new)	MBTOC rec. for 2013 (new)
		<p>Emissions reduction: Over the years the applicants have made facility improvements to improve gas tightness but this is a traditional meat curing process and some of the facilities are older and unusual. The research program continues to work with the applicants to improve gas tightness, IPM and other process improvements which reduce the need for fumigation and result in decreased use of MB. This work needs to continue.</p> <p>Research effort: Research effort is now extended to examine phosphine effectiveness on a commercial scale. A multi-state, multi-university research program is on going and full reports of research have been made available to MBTOC.</p> <p>Registration issues: As with all postharvest registration issues, neither the applicant nor the Party mandated with Montreal Protocol nominations has control over pesticide registration. Phosphine is registered for use on processed meats such as cured pork.</p> <p>MBTOC comments on economics 2011: CUN states that an economic analysis was not conducted because currently there are no technically feasible alternatives.</p>											

¹ExMOP and 16MOP; ²16MOP+2ExMOP+17MOP; ³MOP17+MOP18; ⁴MOP18+MOP19; ⁵MOP19+MOP20; ⁶MOP20+MOP21; ⁷MOP21+MOP22; ⁸MOP22

5 Activity report for 2011 and work plan for 2012

5.1. Membership and procedural issues

In response to instructions from TEAP as contained in the TEAP May 2011 Progress Report (Chapter 11), MBTOC endeavoured to conduct its second meeting in such a manner as to allow all members to participate in discussions on each topic necessary to contribute to an informed decision when evaluating CUEs.

5.2. Activity report for 2011

- Initial summarization of the CUNs (initial sorting and recording carried out by the Secretariat).
- Preparation of questions for Parties. Assessment of responses received from Parties.
- First meeting of MBTOC sub committees in March 2011 on the assessment of the CUNs: MBTOC met in full (all three sub-committees) in Antalya, Turkey. . Bilateral meetings were held by MBTOC-S and MBTOC SC with USA.
- Interim recommendations and preparation of the CUN Interim and Progress reports for consideration by the 31st OEWG
- Site visits: MBTOC-S conducted a field trip to observe alternatives adopted by vegetable and flower growers in the regions around Antalya. MBTOC-SC conducted a site visit to Taxis, a large Turkish exporter of dried fruit and others who uses alternatives to MB for post-harvest uses and to the quarantine division of the Ministry of Agriculture in Izmir.
- 31st OEWG (Geneva, 1-6 August, 2011). Bilateral meetings with USA and the California Strawberry Commission (USA) and Canada.
- MBTOC SC conducted its re-reviews by an agreed email process.
- MBTOC met October 10 – 12, 2011 in Leusden, The Netherlands to assess soils CUNs from the USA and for which new or revised information was submitted. A bilateral was held via teleconference with the USG.
- MBTOC-S and MBTOC-SC prepared the final report on the CUNs for consideration by the Parties at their 22nd Meeting.

The following “Actions” and “Indicative Completion Dates” are the “Working procedures of MBTOC relating to the evaluation of nominations for critical uses of methyl bromide”, as described in Annex 1 of the 16th Meeting of the Parties. The annual work plan is required to be drawn up by MBTOC (supported by the Ozone Secretariat) in consultation with TEAP, which shall submit it to the Meeting of the Parties each year

5.3. Work plan and indicative budget for 2012

Table 5-1. MBTOC work plan and indicative budget: 2012

Tasks and actions	Indicative budget needs where applicable	Indicative completion date	Dates of meetings
1. Parties submit their nominations for critical-use exemptions to the Secretariat	-	24 January 2012	
2. The nominations are forwarded to MBTOC co-chairs for distribution to the subgroups of appointed members	-	7 February 2012	
3. Nominations in full are assessed by the subgroups of appointed members. The initial findings of the subgroups, and any requests for additional information are forwarded to the MBTOC co-chairs for clearance	-	28 February 2012	
4. MBTOC co-chairs forward the cleared advice on initial findings and may request additional information on to the nominating Party concerned and consult with the Party on the possible presumption therein	-	21 February 2012	
5. Nominating Party develops and submits its response to the MBTOC co-chairs	-	7 March 2012	
<p>6. MBTOC Meeting No 1</p> <ul style="list-style-type: none"> • Meets as usual to assess nominations, including any additional information provided by the nominating Party prior to the MBTOC meeting under action 5 and any additional information provided by nominating Party through pre-arranged teleconference, or through meetings with national experts, in accordance with paragraph 3.4 of the terms of reference of TEAP (see Annex I of MOP16, Dec XVI/4) • Bilateral meetings • To discuss and finalise the CUN evaluation process proposed by the co-chairs and commented by the MBTOC members • To discussed any new or standard presumptions that MBTOC seeks to apply in its future assessment of critical-use nominations, for approval by the Meeting of the Parties • Any administrative changes to improve the operations of the Committee, within the scope of Decisions that have been agreed by the Parties • Draft the 2012 Progress Report 	<p>Funds for travel of 1 non-A5 members: US\$3,000</p> <p>Meeting Costs \$3,000</p>	March 2012	China, first half of March 2012 (tentative)
8. MBTOC provides its draft recommendations on the CUNs to TEAP		April, 2012	

Tasks and actions	Indicative budget needs where applicable	Indicative completion date	Dates of meetings
9- TEAP Meeting: To assess the MBTOC report on critical-use nominations and submits the finalised interim report on recommendations and findings to the Secretariat.		April 2012	TBD
10. The Secretariat posts the finalised report on its web site and circulates it to the Parties	-	May 2012	
11. OEWG Bilateral Discussions: Nominating Party has the opportunity to consult with MBTOC on a bilateral basis in conjunction with the Open-ended Working Group meetings		June - August 2012 (TBD)	TBD
12. The nominating Party submits further clarification for the critical-use nomination requested by MBTOC or if requested to do so by the Open-ended Working Group, and provides additional information should it wish to appeal against a critical-use nomination recommendation by MBTOC/TEAP	-	Late June 2012 depending on OEWG date	
13. MBTOC Meeting No 2: <ul style="list-style-type: none"> Meets to reassess only those critical-use nominations in the “unable to assess” category, those where additional information has been submitted by the nominating Party and any critical-use nominations for which additional information has been requested by the Open-ended Working Group (see Annex I of MOP16, Dec XVI/4) finalise the report, including notice of any proposed new standard presumptions to be applied by MBTOC conduct any bilateral consultations requested by Parties draft work plan and budget for MBTOC for 2012 	Funds for travel of 1 non-A5 members: US\$3,000 Meeting costs: \$US 3,000	September-October 2012	TBD.
14. MBTOC draft final report considered by TEAP, finalised and made available to Parties through the Secretariat	-	Middle October 2012	
15. 22 nd Meeting of the Parties			November 2012
Total budget:	US \$: 12,000* US\$ 6,000 (Travel of Non Article 5 member) Meeting Costs \$6,000		

* Travel funds for non A5 members have been requested in the past but not granted

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ANNEX 1 - Decision IX/6

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).

ANNEX II - Decision XVI/4

Review of the working procedures and terms of reference of the Methyl Bromide Technical Options Committee

Report of the Sixteenth Meeting of the Parties to the Montreal Protocol (Annex I), Prague, 22–26 November 2004), paragraph 15.

A. Working procedures of the Methyl Bromide Technical Options Committee relating to the evaluation of nominations for critical uses of methyl bromide

15. An annual work plan will enhance the transparency of, and insight in, the operations of MBTOC. Such a plan should indicate, among other things:

- (a) Key events for a given year;
- (b) Envisaged meeting dates of MBTOC, including the stage in the nomination and evaluation process to which the respective meetings relate;
- (c) Tasks to be accomplished at each meeting, including appropriate delegation of such tasks;
- (d) Timing of interim and final reports;
- (e) Clear references to the timelines relating to nominations;
- (f) Information related to financial needs, while noting that financial considerations would still be reviewed solely in the context of the review of the Secretariat's budget;
- (g) Changes in the composition of MBTOC, pursuant to the criteria for selection;
- (h) Summary report of MBTOC activities over the previous year, including matters that MBTOC did not manage to complete, the reasons for this and plans to address these unfinished matters;
- (i) Matrix with existing and needed skills and expertise; and
- (j) Any new or revised standards or presumptions that MBTOC seeks to apply in its future assessment of critical-use nominations, for approval by the Meeting of the Parties.

ANNEX III - Part A: Historical Trend in MB Preplant Soil Nominations and Exemptions

List of nominated (2005 – 2012 in part) and exempted (2005 – 2011 in part) amounts of MB granted by Parties under the CUE process for each crop or commodity.

Party	Industry	Total CUN MB Quantities								Total CUE Quantities						
		2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011
Australia	Cut Flowers – field	40.000	22.350							18.375	22.350					
Australia	Cut flowers – protected	20.000								10.425						
Australia	Cut flowers, bulbs – protected Vic	7.000	7.000	6.170	6.150					7.000	7.000	3.598	3.500			
Australia	Strawberry Fruit	90.000								67.000						
Australia	Strawberry runners	35.750	37.500	35.750	35.750	29.790	29.790	29.790	29.790	35.750	37.500	35.750	35.750	29.790	29.790	23.840
Belgium	Asparagus	0.630	0.225							0.630	0.225					
Belgium	Chicory	0.600	0.180							0.180	0.180					
Belgium	Chrysanthemums	1.800	0.720							1.120						
Belgium	Cucumber	0.610	0.545							0.610	0.545					
Belgium	Cut flowers – other	6.110	1.956							4.000	1.956					
Belgium	Cut flowers – roses	1.640														
Belgium	Endive (sep from lettuce)		1.650								1.650					
Belgium	Leek & onion seeds	1.220	0.155							0.660						
Belgium	Lettuce(& endive)	42.250	22.425							25.190						
Belgium	Nursery	Not Predictable	0.384							0.900	0.384					

Party	Industry	Total CUN MB Quantities								Total CUE Quantities						
		2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011
Belgium	Orchard pome & berry	1.350	0.621							1.350	0.621					
Belgium	Ornamental plants	5.660								0.000						
Belgium	Pepper & egg plant	5.270	1.350							3.000	1.350					
Belgium	Strawberry runners	3.400	0.900							3.400	0.900					
Belgium	Tomato (protected)	17.170	4.500							5.700	4.500					
Belgium	Tree nursery	0.230	0.155							0.230	0.155					
Canada	Strawberry runners (PEI)	14.792	6.840	7.995	7.462	7.462	7.462	5.261	5.261	(a)14.792	6.840	7.995	7.462	7.462	7.462	5.261
Canada	Strawberry runners (Quebec)		1.826	1.826						(a)	1.826	1.826				
Canada	Strawberry runners (Ontario)			6.129								6.129				
France	Carrots	10.000	8.000	5.000						8.000	8.000	1.400				
France	Cucumber	85 revised to 60	60.000	15.000						60.000	60.000	12.500				
France	Cut-flowers	75.000	60.250	12.000						60.000	52.000	9.600				
France	Forest tree nursery	10.000	10.000	1.500						10.000	10.000	1.500				
France	Melon	10.000	10.000							7.500	6.000					
France	Nursery: orchard, raspberry	5.000	5.000	2.000						5.000	5.000	2.000				
France	Orchard replant	25.000	25.000	7.500						25.000	25.000	7.000				
France	Pepper	Incl in.tomato cun	27.500	6.000							27.500	6.000				

Party	Industry	Total CUN MB Quantities								Total CUE Quantities						
		2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011
France	Strawberry fruit	90.000	86.000	34.000						90.000	86.000					
France	Strawberry runners	40.000	4.000	35.000						40.000	40.000	28.000				
France	Tomato (and eggplant for 2005 only)	150(all solanaceous)	60.500	33.250						125.000	48.400					
France	Eggplant		27.500	33.250							48.400					
Greece	Cucurbits	30.000	19.200							30.000	19.200					
Greece	Cut flowers	14.000	6.000							14.000	6.000					
Greece	Tomatoes	180.000	73.600							156.000	73.600					
Israel	Broomrape			250.000	250.000	125.000	12.500	12.500				250.000	250.000	125.000	12.500	
Israel	Cucumber - protected new 2007			25.000	18.750		18.750	12.500				25.000	18.750	-	15.937	
Israel	Cut flowers – open field	77.000	67.000	80.755	53.345	42.777	42.554	23.292		77.000	67.000	74.540	44.750	34.698	28.554	
Israel	Cut flowers – protected	303.000	303.000	321.330	163.400	113.821	72.266	52.955		303.000	240.000	220.185	114.450	85.431	63.464	
Israel	Fruit tree nurseries	50.000	45.000	10.000						50.000	45.000	7.500				
Israel	Melon – protected & field	148.000	142.000	140.000	87.500	87.500	87.500	35.000		125.650	99.400	105.000	87.500	87.500	70.000	
Israel	Potato	239.000	231.000	137.500	93.750	75.000				239.000	165.000	137.500	93.750	75.000		
Israel	Seed production	56.000	50.000			22.400				56.000	28.000			NR		
Israel	Strawberries – fruit (Sharon)	196.000	196.000	176.200	64.125	52.250	47.500	28.500		196.000	196.000	93.000	105.960	42.750		
Israel	Strawberries – fruit (Sharon & Ghaza)														57.063	

Party	Industry	Total CUN MB Quantities								Total CUE Quantities						
		2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011
Israel	Strawberry runners (Sharon)	35.000	35.000		20	15.800	13.570	13.500		35.000	35.000	28.000	31.900	15.825		
Israel	Strawberry runners and fruit Ghaza				87.875	67.500	67.500	34.000						47.250		
Israel	Strawberry runners (Sharon & Ghaza)														22.320	
Israel	Tomatoes			90.000								22.750				
Israel	Sweet potato					95.000	20.000	20.000					111.500	95.000	20,000	
Italy	Cut flowers (protected)	250.000	250.000	30.000						250.000	187.000	30.000				
Italy	Eggplant (protected)	280.000	200.000	15.000						194.000	156.000					
Italy	Melon (protected)	180.000	135.000	10.000						131.000	131.000	10.000				
Italy	Pepper (protected)	220.000	160.000	67.000						160.000	130.000	67.000				
Italy	Strawberry Fruit (Protected)	510.000	400.000	35.000						407.000	320.000					
Italy	Strawberry Runners	100.000	120.000	35.000						120.000	120.000	35.000				
Italy	Tomato (protected)	1300.000	1030.000	418.000						871.000	697.000	80.000				
Japan	Cucumber	88.300	88.800	72.400	68.600	61.400	34.100	29.120	26.162	88.300	88.800	72.400	51.450	34.300	30.690	27.621
Japan	Ginger – field	119.400	119.400	112.200	112.100	102.200	53.400	47.450	42.235	119.400	119.400	109.701	84.075	63.056	53.400	47.450
Japan	Ginger – protected	22.900	22.900	14.800	14.800	12.900	8.300	7.770	6.558	22.900	22.900	14.471	11.100	8.325	8.300	7.036
Japan	Melon	194.100	203.900	182.200	182.200	168.000	90.800	77.600	67.936	194.100	203.900	182.200	136.650	91.100	81.720	73.548
Japan	Peppers (green and hot)	189.900	200.700	169.400	162.300	134.400	81.100	68.260	61.101	187.200	200.700	156.700	121.725	81.149	72.990	65.691
Japan	Watermelon	126.300	96.200	94.200	43.300	23.700	15.400	13.870	12.075	129.000	98.900	94.200	32.475	21.650	14.500	13.050

Party	Industry	Total CUN MB Quantities								Total CUE Quantities						
		2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011
Malta	Cucumber		0.096								0.127					
Malta	Eggplant		0.128								0.170					
Malta	Strawberry		0.160								0.212					
Malta	Tomatoes		0.475								0.594					
New Zealand	Nursery material	1.085	1.085								0.000					
New Zealand	Strawberry fruit	42.000	42.000	24.780						42.000	34.000	12.000				
New Zealand	Strawberry runners	10.000	10.000	5.720						8.000	8.000	6.234				
Poland	Strawberry Runners	40.000	40.000	25.000	12.000					40.000	40.000	24.500				
Portugal	Cut flowers	130.000	8.750							50.000	8.750					
Spain	Cut Flowers – Cadiz	53.000	53.000	35.000						53.000	42.000					
Spain	Cut Flowers – Catalonia	20.000	18.600	12.840	17.000 (+Andalu cia)					20.000	15.000	43.490 (+Andalu cia)				
Spain	Pepper	200.000	155.000	45.000						200.000	155.000	45.000				
Spain	Strawberry Fruit	556.000	499.290	80.000						556.000	499.290	0.0796				
Spain	Strawberry Runners	230.000	230.000	230.000	215.000					230.000	230.000	230.000				
UK	Cut flowers		7.560								6.050					
UK	Ornamental tree nursery	12.000	6.000							6.000	6.000					
UK	Strawberry (& raspberry in 2005)	80.000	63.600							68.000	54.500					

Party	Industry	Total CUN MB Quantities								Total CUE Quantities						
		2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011
UK	Raspberry nursery		4.400							4.400	54.500					
USA	Chrys. Cuttings/roses	29.412								29.412	0.000					
USA	Cucurbits – field	1187.800	747.839	598.927	588.949	411.757	340.405	218.032	59.500	1187.800	747.839	592.891	486.757	407.091	302.974	195.698
USA	Eggplant – field	76.761	101.245	96.480	79.546	62.789	34.732	21.561	6.904	76.721	82.167	85.363	66.018	48.691	32.820	19.725
USA	Forest nursery seedlings	192.515	157.694	152.629	133.140	125.758	120.853	106.043	34.230	192.515	157.694	122.032	131.208	122.060	117.826	93.547
USA	Ginger	9.200								9.200	0.000					
USA	Orchard replant	706.176	827.994	405.415	405.666	314.007	226.021	203.591	18.324	706.176	527.600	405.400	393.720	292.756	215.800	183.232
USA	Ornamentals	210.949	162.817	149.965	138.538	137.776	95.204	70.178	48.164	154.000	148.483	137.835	138.538	107.136	84.617	64.307
USA	Nursery stock - fruit trees, raspberries, roses	45.789	64.528	12.684	51.102	27.663	17.954	7.955	1.591	45.800	64.528	28.275	51.102	25.326	17.363	7.955
USA	Peppers – field	1094.782	1498.530	1151.751	919.006	783.821	463.282	212.775	28.366	1094.782	1243.542	1106.753	756.339	548.984	463.282	206.234
USA	Strawberry fruit – field	2468.873	1918.400	1733.901	1604.669	1336.754	1103.422	1023.471	756.515	2052.846	1730.828	1476.019	1349.575	1269.321	1007.477	812.709
USA	Strawberry runners	54.988	56.291	4.483	8.838	8.837	7.381	7.381	3.752	54.988	56.291	4.483	8.838	7.944	4.690 + 2.018	6.036
USA	Tomato – field	2876.046	2844.985	2334.047	1840.100	1406.484	994.582	336.191	54.423	737.584	2476.365	2065.246	1406.484	1003.876	737.584	292.751
USA	Turfgrass	352.194	131.600	78.040	52.189	0					131.600	78.04	0			
USA	Sweet potato	224.528			18.144	18.144	18.144	14.515	8.709				18.144	18.144	14.515	11.612

ANNEX IV – Part B: Historical Trend in MB Structural and Commodity Nominations and Exemptions

List of nominated (2005 – 2012 in part) and exempted (2005 – 2011 in part) amounts of MB granted by Parties under the CUE process for each crop or commodity.

Party	Industry	Total CUN MB Quantities								Total CUE MB Quantities						
		2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011
Australia	Almonds	1.900	2.100							1.900	2.100					
Australia	Rice consumer packs	12.300	12.300	10.225	9.200 +1.8	9.200	7.820	5.660	4.870	6.150	6.150	9.205	9.200	7.820	6.650	4.870
Belgium	Artefacts and structures	0.600	0.307							0.590	0.307					
Belgium	Antique structure & furniture	0.750	0.199							0.319	0.199					
Belgium	Churches, monuments and ships' quarters	0.150	0.059							0.150	0.059					
Belgium	Electronic equipment	0.100	0.035							0.100	0.035					
Belgium	Empty silo	0.050	0.043							0.050	0.043					
Belgium	Flour mill see mills below	0.125	0.072							See mills below	0.072					
Belgium	Flour mills	10.000	4.170							9.515	4.170					
Belgium	Mills	0.200	0.200							0.200	0.200					
Belgium	Food processing facilities	0.300	0.300							0.300	0.300					
Belgium	Food Processing premises	0.030	0.030							0.030	0.030					
Belgium	Food storage (dry) structure	0.120	0.120							0.120	0.000					

Party	Industry	Total CUN MB Quantities								Total CUE MB Quantities							
Belgium	Old buildings	7.000	0.306							1.150	0.306						
Belgium	Old buildings and objects	0.450	0.282							0.000	0.282						
Belgium	Woodworking premises	0.300	0.101							0.300	0.101						
Canada	Flour mills	47.200	34.774	30.167	28.650	26.913	22.878	14.107	11.020	(a)47	34.774	30.167	28.650	26.913	22.878	14.107	
Canada	Pasta manufacturing facilities	(a)	10.457	6.757	6.067	4.740	4.7400	3.529		(a)	10.457	6.757	6.067	4.7400	3.529		
Canada	Commodities					0.068											
France	Seeds sold by PLAN-SPG company	0.135	0.135	0.100						0.135	0.135	0.096					
France	Mills	55.000	40.000	8.000						40.000	35.000	8.000					
France	Rice consumer packs	2.000	2.000							2.000	2.000						
France	Chestnuts	2.000	2.000	1.800						2.000	2.000	1.800					
Germany	Artefacts	0.250	0.100							0.250	0.100						
Germany	Mills and Processors	45.000	19.350							45.000	19.350						
Greece	Dried fruit	4.280	3.081	0.900						4.280	3.081	0.45					
Greece	Mills and Processors	23.000	16.000	1.340						23.000	15.445	1.340					
Greece	Rice and legumes		2.355								2.355						
Ireland	Mills		0.888	0.611							0.888						
Israel	Artefacts	0.650	0.650	0.600						0.650	0.650						
Israel	Dates (post harvest)	3.444	3.444	2.200	1.800	2.100				3.444	2.755	2.200	1.800	2.100	1.04		
Israel	Flour mills (machinery &	2.140	1.490	1.490	0.800	0.300				2.140	1.490	1.040	0.312	0.300			

Party	Industry	Total CUN MB Quantities								Total CUE MB Quantities						
	storage)															
Israel	Furniture– imported	1.422	1.422	2.042						1.422	0.000					
Italy	Artefacts	5.500	5.500	5.000						5.225	0.000	5.000				
Italy	Mills and Processors	160.000	130.000	25.000						160.000	65.000	25.000				
Japan	Chestnuts	7.100	6.500	6.500	6.300	5.800	5.400	5.350	4.984	7.100	6.800	6.500	6.300	5.800	5.400	5.350
Latvia	Grains		2.502								2.502					
Netherlands	Strawberry runners post harvest		0.120	0.120		0.120					0	0.120				
Poland	Medicinal herbs & dried mushrooms as dry commodities	4.000	3.560	1.800	0.500					4.100	3.560	1.800	1.800			
Poland	Coffee, cocoa beans	(a)	2.160	2.000	0.500						2.160	1.420	1.420			
Spain	Rice		50.000								42.065					
Switzerland	Mills & Processors	8.700	7.000							8.700	7.000					
UK	Aircraft			0.165								0.165				
UK	Mills and Processors	47.130	10.195	4.509						47.130	10.195	4.509				
UK	Cereal processing plants		8.131	3.480					(a)		8.131					
UK	Cheese stores	1.640	1.248	1.248						1.640	1.248	1.248				
UK	Dried commodities (rice, fruits and nuts) Whitworths	2.400	1.256							2.400	1.256					
UK	Herbs and spices	0.035	0.037	0.030						0.035	0.037					
UK	Mills and Processors (biscuits)	2.525	1.787	0.479						2.525	1.787					

Party	Industry	Total CUN MB Quantities								Total CUE MB Quantities							
UK	Spices structural equip.	1.728								1.728	0.000	0.479					
UK	Spices stored	0.030								0.030	0.000						
UK	Structures buildings (herbs and spices)	3.000	1.872	0.908						3.000	1.872	0.908					
UK	Structures, processors and storage (Whitworths)	1.100	0.880	0.257						1.100	0.880	0.257					
UK	Tobacco equipment	0.523								0.050							
UK	Woven baskets	0.770								0.770							
USA	Dried fruit and nuts (walnuts, pistachios, dried fruit and dates and dried beans)	89.166	87.719	91.299	67.699	58.912	19.242	10.041	4.907	89.166	87.719	78.983	58.921	45.623	19.242	5.000	
USA	Dry commodities/ structures (cocoa beans)	61.519	61.519	64.028	52.256	51.002				61.519	55.367	64.082	53.188				
USA	Dry commodities/ structures (processed foods, herbs and spices, dried milk and cheese processing facilities) NPMA	83.344	83.344	85.801	72.693	66.777	37.778	17.365	17.365	83.344	69.118	82.771	69.208	54.606	37.778	17.365	
USA	Smokehouse hams (Dry cure pork products) (building and product)	136.304	135.742	40.854	19.669	19.699	4.465	3.730	3.730	67.907	81.708	18.998	19.699	18.998	4.465	3.730	
USA	Mills and Processors	536.328	505.982	401.889	362.952	291.418	173.023	135.299	135.299	483.000	461.758	401.889	348.237	291.418	173.023	135.299	