



Distr.: General
13 July 2011

Original: English



**United Nations
Environment
Programme**

**Open-ended Working Group of the Parties to
the Montreal Protocol on Substances that
Deplete the Ozone Layer
Thirty-first meeting**
Montreal, 1–5 August 2011
Items 4–11 of the provisional agenda*

Issues for discussion by and information for the attention of the Open-ended Working Group of the Parties to the Montreal Protocol at its thirty-first meeting

Note by the Secretariat

Addendum

Introduction

1. The present addendum provides, in chapter I, updated information on a number of the items on the agenda of the thirty-first meeting of the Open-ended Working Group of the Parties to the Montreal Protocol (UNEP/OzL.Pro.WG.1/31/1/Rev.1) that were originally introduced in the note by the Secretariat set out in document UNEP/OzL.Pro.WG.1/31/2. They include agenda item 3, on the report of the Technology and Economic Assessment Panel on the replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol, agenda items 4 and 5, on adjustments and amendments to the Montreal Protocol, and agenda items 6–8, relating primarily to work included in the 2011 progress report of the Technology and Economic Assessment Panel. The addendum also includes, in chapter II, additional information that the Secretariat would like to bring to the parties' attention, including in relation to the upcoming changes to the hydrochlorofluorocarbon (HCFC) provisions of the World Customs Organization harmonized system of Customs codes.

I. Summary of issues for discussion by the Open-ended Working Group at its thirty-first meeting

**Agenda item 3: Report of the Technology and Economic Assessment Panel's
task force on the 2012–2014 replenishment of the Multilateral Fund for the
Implementation of the Montreal Protocol**

A. Overview

2. Consistent with decision XXII/3 of the Twenty-Second Meeting of the Parties, the Technology and Economic Assessment Panel has prepared a report to enable the Twenty-Third Meeting of the Parties to take a decision on the appropriate level of the 2012–2014 replenishment of the Multilateral

* UNEP/OzL.Pro.WG.1/31/1/Rev.1.

Fund. Pursuant to decision XXII/3, the Panel established a task force and consulted widely to accomplish that task. After detailed analysis of the implications of six funding scenarios, the Panel estimated the total requirement for the triennium at between \$245.2 million and \$653.5 million.

B. Scenarios considered and related funding requirements

3. In accordance with its terms of reference, the task force had to take into account a number of factors in estimating the level of resources required during the triennium 2012–2014, including the requirements of the Protocol, the guidelines of the Executive Committee and the early experience of the Executive Committee in approving HCFC phase-out activities. In general, the Executive Committee has decided to address HCFCs through national HCFC phase-out management plans. Phase I of those plans was to be designed to facilitate compliance with the 2013 freeze and the 2015 10 per cent reduction step. In assessing the cost of these plans, the task force used the specific project approvals and costs for those plans that had been approved to date. For those not yet approved, the task force had to make estimates. The estimates were facilitated first by dividing the countries into five groups, depending on their level of consumption, and then doing a country-by-country assessment. This assessment took into account the funding policies adopted by the Executive Committee to implement the HCFC phase-out management plan concept, including cost-effectiveness thresholds and levels of assistance for low-volume-consuming countries. In addition, the task force considered trends emerging from the already approved plans.

4. In extrapolating from the Committee's approvals of HCFC phase-out management plans to date, the task force noted that in many cases, approvals for phase I of plans proposed by non-low-volume-consuming countries had supported party desires to receive funding for the phase-out of more HCFCs than required to meet the 2015 10 per cent reduction step without committing to go beyond that step. In an effort to take into account that parties might achieve different levels of reductions beyond the 10 per cent step, the task force prepared three scenarios, one assuming that the Executive Committee would fund the remaining plans, to achieve a 10 per cent reduction, one assuming a 15 per cent reduction and one assuming a 20 per cent reduction. In addition, the task force noted that in approving plans to date the Executive Committee had funded diverse sectoral distributions that took into account diverse national use patterns and diverse national phase-out strategies. For example, consistent with the requirement to address higher ozone-depleting-potential substances first, the Committee approved several plans that included large components aimed at reductions of HCFC-141b in the foam subsectors, along with smaller components aimed at reducing a portion of HCFC use in the refrigeration and air-conditioning manufacturing subsector and the servicing sector. Alternatively, a number of the approved plans included reductions in the foam and servicing sectors only.

5. Based on this diverse funding history, the task force prepared two scenarios for modelling the composition of reduction packages for those countries whose plans had not yet been approved: the first package assumes that 90 per cent of the reductions will come from foams, that zero will come from refrigeration and air-conditioning manufacturing and that 10 per cent will come from servicing; the second package assumes that 75 per cent of reductions will come from foams, 15 per cent from refrigeration and air-conditioning manufacturing and 10 per cent from servicing. Together with the 10 per cent, 15 per cent and 20 per cent reduction scenarios discussed above, this yielded six funding scenarios for HCFC phase-out management plans. Those scenarios and their estimated funding requirements are illustrated in table 1.

Table 1
HCFC reduction scenarios and funding requirements

<i>Funded reductions from baseline</i>	<i>Full funding requirement for triennium 2012-2014 for three levels of funded baseline reductions and two subsector reduction packages (millions of United States dollars)</i>
Subsector reduction package 75-15-10%	
10%	306.1
15%	481.3
20%	653.5
Subsector reduction package 90-0-10%	
10%	245.2
15%	386.1
20%	529.3

6. The six scenarios in table 1 result in a range of total funding required for the period 2012–2014 of between \$245 million and \$653 million. This is the full funding necessary to enable parties operating under paragraph 1 of Article 5 of the Protocol to comply with, and in some cases surpass their obligations under, the forthcoming control schedules under the Protocol; they include funding for non-HCFC activities, for existing and new HCFC phase-out management plans, for the closure of HCFC production facilities, for the Compliance Assistance Programme and institutional strengthening, and for the full administrative costs of administering the Multilateral Fund over the triennium. While the range is admittedly large, the task force notes that there are qualitative grounds for suggesting that the most likely funding outcome, comprising funding for addressing both consumption and production closure could lie in the middle of the range. In that regard, the average of the scenarios above with a 10 per cent spread would be \$390.2 million–\$477 million for the triennium 2012–2014.

7. The report highlighted four factors that would have a very significant impact on the calculation of the triennium funding requirement. First, it noted that the funding requirement was very much dependent on the eventual HCFC production plant closure funds that might be approved and disbursed for the triennium. In fact, production closure costs account for between 38 per cent and 46 per cent of the total funding requirement noted for each of the scenarios. Furthermore, while the task force analysed HCFC consumption phase-out costs in detail using a mathematical model that extrapolated from a relatively large sample of known data, it had little policy guidance or data on which to base a production sector analysis. Accordingly, its analysis assumed that the phase-out of production of HCFC-22, HCFC-141b and HCFC-142b would begin in 2013 and occur in parallel with consumption phase-out through separate plant closures. In conclusion, it assumed a value of \$3 per kg of HCFC-141b and HCFC-142b phased out, consistent with costs for the chlorofluorocarbon (CFC) production sector closure. That said, the task force noted a number of factors that could conceivably have a significant impact on funding for HCFC-22 closures, including the fact that some plants had already received CFC closure funding, some HCFC-22 production could be diverted from consumptive uses to feedstock uses, and some HCFC-22 production was continuing to generate valuable climate change credits for destruction of hydrofluorocarbon (HFC) by-product emissions.

8. The second most significant factor influencing total cost was noted as being the variation in the percentage reductions from the baseline funded in phase I of HCFC phase-out management plans; as noted above, the task force prepared three scenarios to capture this variation.

9. The third most significant factor noted was the share of the reductions that was attributed to the various technology subsectors and the impact of cost-effectiveness values. While cost-effectiveness values were determined from detailed technical analysis and from existing Multilateral Fund rules and policies, they had the potential to produce important variations in total cost.

10. Lastly, and in addition to the above-noted key factors, the panel found that the largest HCFC producing and consuming party produced and consumed such a dominant share of HCFCs that its treatment could have a significant influence on total costs for both the first and subsequent trienniums. As this party has not yet had its HCFC phase-out management plan approved, the task force noted that it had applied similar technical criteria in its analysis of HCFC funding scenarios for the party and for the other larger consuming parties and that no specific attempt had been made to assess possible outcomes arising from continuing negotiation processes.

C. Consideration of funding for future trienniums and next steps

11. In accordance with its terms of reference, the task force also considered the indicative funding ranges for the succeeding two trienniums, and concluded that they were \$572.9 million–\$686.6 million for the triennium 2015–2017 and \$611.4 million–\$776.1 million for the triennium 2018–2020. The average funding level of all scenarios across the three trienniums is \$587.8 million per triennium, equivalent to total funding of \$1,763 million for the period 2012–2020. It should be noted that the indicative funding estimates for the second and third trienniums are based on further stages of HCFC phase-out management plan assuming similar funding conditions.

12. As can be seen, estimates for the 2012–2014 replenishment requirement are generally lower than those for the subsequent two replenishments. This is due, in large part, to the high level of funding remaining available in 2011 for stage I HCFC phase-out management plan. It also arises because funding levels in 2015–2017 and 2018–2020 are required to support, on average, greater levels of reductions in HCFC consumption, i.e., 15 per cent in the triennium 2015–2017 and 16.5 per cent in the triennium 2018–2020, compared to a minimum of 10 per cent in 2012–2014.

13. Traditionally, the Open-ended Working Group has considered the initial work product of previous replenishment task forces and requested them to undertake further work to clarify existing scenarios, or to consider different ones, prior to submission of results to the Meeting of the Parties. Accordingly, the Working Group may wish to consider how it wishes to take this issue forward to the Twenty-Third Meeting of the Parties.

Agenda item 4: Proposed adjustments to the Montreal Protocol

14. Pursuant to paragraph 9 of Article 2 of the Montreal Protocol any proposal to adjust the Protocol must be submitted to the Ozone Secretariat at least six months before the meeting of the parties at which such proposal will be considered. While no explicit proposals to adjust the Protocol had been submitted to the Secretariat by the date six months before the Twenty-Third Meeting of the Parties, it is possible that the parties may decide that some components of the proposed amendments to the Protocol are actually in the nature of an adjustment.

Agenda item 5: Proposed amendments to the Montreal Protocol

15. On 7 May 2011 the Ozone Secretariat received a proposal to amend the Protocol from the Government of the Federated States of Micronesia. On 9 May 2011 it also received a proposal to amend the Protocol from the Governments of Canada, Mexico and the United States of America. The proposals, which were submitted pursuant to Article 9 of the Vienna Convention for the Protection of the Ozone Layer and paragraph 10 of Article 2 of the Protocol, may be found in documents UNEP/OzL.Pro.WG.1/31/4 and UNEP/OzL.Pro.WG.1/31/5, respectively.

16. The proposal submitted by the Federated States of Micronesia is similar to the proposal submitted by that party in 2010, in that it would add a new Article 2J to the Protocol that would require the control of the production and consumption of HFCs, including two low-global-warming potential HFCs that are also called hydrofluoroolefins (HFOs). Under this proposal, parties not operating under paragraph 1 of Article 5 of the Protocol would, in the 12-month period beginning on 1 January 2014, be required to reduce their production and consumption of those substances by 15 per cent of their baseline, which is defined as the average of the 2004–2006 levels of production and consumption of HCFCs and HFCs. Reductions of 30 per cent would follow in the 12-month period beginning on 1 January 2017, 45 per cent in 2020, 55 per cent in 2023, 70 per cent in 2026, 85 per cent in 2029 and 90 per cent in 2031. In the proposed text, all these reduction rates and years are enclosed in square brackets to indicate that they are negotiable, and all the production limitations noted above are subject to the allowance of an additional 10 per cent to meet the basic domestic needs of parties operating under paragraph 1 of Article 5.

17. For parties operating under paragraph 1 of Article 5, the proposal calls for a six-year grace period from the deadlines noted in the preceding paragraph. In addition, the baselines for such parties would be different, in that they would be based solely on 2007–2009 HCFC production and consumption. The proposal includes a provision that would extend the mandate of the Multilateral Fund to cover agreed incremental costs of activities to enable parties operating under paragraph 1 of Article 5 to comply with the agreed HFC controls.

18. The required HFC controls would also require all parties to meet efficiency standards in the production of HCFC-22 and to destroy all residual by-product HFCs. Parties operating under Article 5 would receive assistance from the Multilateral Fund to enable such destruction unless it was undertaken pursuant to a project approved by the Clean Development Mechanism prior to 1 January 2010. Lastly, the proposal makes it clear that it would operate without prejudice to the treatment of HFCs under the United Nations Framework Convention on Climate Change and its Kyoto Protocol. In all, the Federated States of Micronesia states that the result of the amendment would be the mitigation of up to 100 billion tonnes of carbon dioxide equivalent by 2050.

19. The proposal of Canada, Mexico and the United States is also similar to the proposal submitted by those parties to the Twenty-Second Meeting of the Parties in that it aims to list 20 specific HFCs, including the two HFOs covered by the proposal of the Federated States of Micronesia, in a new annex F to the Protocol. Recognizing that alternatives are not currently available for all HFC applications, the proposal calls for a gradual phase-down rather than a phase-out of the listed chemicals. The required reductions would be taken from a baseline, which for developing countries (parties operating under paragraph 1 of Article 5 of the Protocol) would be based on 2005–2008 production and consumption of HCFCs; for developed countries (parties not operating paragraph 1 of Article 5) the baseline would be based on production and consumption of HFCs plus 85 per cent of HCFC production and consumption averaged over 2005–2008. Developed-country parties would be required to meet an initial phase-down of production and consumption of 10 per cent of the baseline amount by the end of 2015, followed by a set of further reductions leading, by the end of 2033, to the elimination of

85 per cent of baseline production and consumption. Production and consumption equal to 15 per cent of the baseline would be permitted from that point forward. Parties operating under paragraph 1 of Article 5 would have a specifically defined grace period to meet each of the reductions required for parties not so operating.

20. The proposal also includes a provision that would limit by-product emissions of HFCs from each line producing HCFC-22 that was not the subject of a reduction project approved by the Clean Development Mechanism. Lastly, the proposal would make eligible for funding from the Multilateral Fund the phase-down of HFC production and consumption and the reduction of HFC-23 by-product emissions from parties operating under paragraph 1 of Article 5. A companion decision would allow the Executive Committee immediately to facilitate the formulation and implementation of projects to address HCFC-22 by-product emissions.

21. In generally applicable terms, the proposal calls for the measurement of production and consumption of HFCs in terms of global-warming potential instead of ozone-depletion potential; the licensing of HFC imports and exports; bans on imports and exports of HFCs to non-parties to the amendment; and reporting on the production and consumption of HFCs and the emission of HFC-23 produced as a by-product.

22. The proposal states that it would not affect the provisions of the Framework Convention on Climate Change and its Kyoto Protocol governing HFCs. The Montreal Protocol obligations would therefore be seen as additional obligations and parties could follow them as a way of meeting some of their HFC obligations under the Framework Convention. In all, its proponents say, the proposal would enable a reduction in emissions of an estimated 98,800 million tonnes of carbon dioxide equivalent up to and including 2050.

Agenda item 6: 2011 progress report of the Technology and Economic Assessment Panel

23. Among the large number of items expected to be discussed in the presentation of the Technology and Economic Assessment Panel is the Panel's response to paragraphs 7 and 8 of decision XXII/22. Paragraph 7 requested the Panel and its technical options committees to present to the parties prior to the thirty-first meeting of the Open-ended Working Group guidelines for the nomination of experts by the parties in accordance with section 2.9 of the Panel's terms of reference. Paragraph 8 of the decision requested the Panel to consider the need for balance and appropriate expertise when appointing members of the technical options committees, task forces and other subsidiary groups in accordance with sections 2.1, 2.5 and 2.8 of the Panel's terms of reference.

24. In response to these requests, the Panel established a balanced task force of eight members, which included members of all technical options committees and two of the Panel's senior experts.

25. Regarding the nomination of experts the task force reviewed its various methods of finding new members and concluded that the co-chairs of the Panel and the technical options committees should develop more detailed descriptions of the specific expertise that the Panel required. The task force also identified specific improvements that could be made to a matrix of needed capabilities and a matrix of current capabilities, including harmonizing the current matrices used by the Panel and the technical options committees. In addition, the task force discussed proposed timelines for the regular review and updates of the matrices. Lastly, the task force compiled relevant information and recommended creating a standard nomination form or at least standardizing nomination content to assist the parties in collecting and providing information that the technical options committee co-chairs would need for considering candidates and making appointments and that the Panel would use in recommending appointments for parties' consideration and confirmation. It was also suggested that, if agreed to by the parties and financed and managed by the Ozone Secretariat, a searchable database could be prepared for the Panel section of the Ozone Secretariat website that would include a roster of expertise for the Panel and the technical options committees.

26. Regarding balance, the Panel recommended that it should be considered for their experts from parties operating under paragraph 1 of Article 5 and those not so operating, and that within that overall major balance they would also consider the need for regional distribution. The Working Group may wish to consider what action, if any, they may wish to recommend on this issue to the Twenty-Third Meeting of the Parties.

Agenda item 7: Issues related to exemptions from Article 2 of the Montreal Protocol

Item 7 (a): Nominations for essential-use exemptions for 2012 and 2013

27. The Technology and Economic Assessment Panel received four nominations for essential-use exemptions for CFCs for the manufacture of metered-dose inhalers in 2012 totalling 877.34 tonnes for 2012 and 125 tonnes for 2013. It is worthy of note that requests for exemptions for metered-dose inhalers from parties operating under paragraph 1 of Article 5 have decreased from nine in 2009, for a total of 2,062.48 tonnes, to three in 2011, for a total of 627.34 tonnes. The Panel's detailed review of the metered-dose-inhaler nominations can be found in sections 2.2.14–2.2.17 (pages 15–29) of volume I of its 2011 progress report. In addition to the nominations for metered-dose inhalers, the Panel received a nomination for an essential-use exemption for CFCs from the Russian Federation, for aerospace uses, and a request for an essential-use exemption for bromochloromethane from Jordan relating to a plant that might be built to produce a flame retardant. The detailed review of those nominations can be found in section 4.5 (pages 54–58) of volume I of the Panel's 2011 progress report.

28. Table 2 summarizes the parties' requests for essential-use exemptions and the Panel's initial recommendations. A brief explanation is given where the Panel's recommendation differs from a party's initial request.

Table 2

Essential-use nominations submitted in 2011 for 2012 and 2013 (in metric tonnes) and recommendations of the Technology and Economic Assessment Panel

<i>Party</i>	<i>Approved for 2011</i>	<i>Nominated for 2012/2013</i>	<i>Recommendation of the Technology and Economic Assessment Panel</i>
Parties not operating under paragraph 1 of Article 5			
Russian Federation (metered-dose inhalers)	212	250/125	Recommended 212. Unable to recommend 38, believing the difference can be supplied by CFC-free imports. Unable to recommend 125 for 2013, on the grounds that, if the phase-out is not complete by the end of 2012, importation of CFC-free alternatives should be increased to make up for any shortfall.
Russian Federation (aerospace)	100	100	Recommended 100
Subtotal: parties not operating under paragraph 1 of Article 5	312	350/125	312/0
Jordan (bromochloromethane as a solvent to produce a flame retardant in a plant to be built)	Not requested	62–132	Not recommended given the availability of alternatives
Bangladesh (metered-dose inhalers)	57	40.35	Recommended 24.67. Unable to recommend any amount for fluticasone/salmeterol metered-dose inhalers owing to availability of alternatives.
China (metered-dose inhalers)	741.15	562.89	Recommended 532.04 Unable to recommend any amount for metered-dose inhalers using the active ingredient ipratropium owing to availability of alternatives; also unable to recommend export requests to some countries for metered-dose inhalers using the active ingredients beclomethasone and salbutamol owing to availability of alternatives.

<i>Party</i>	<i>Approved for 2011</i>	<i>Nominated for 2012/2013</i>	<i>Recommendation of the Technology and Economic Assessment Panel</i>
Pakistan (metered-dose inhalers)	39.6	24.1	Recommended 24.1
Subtotal: parties operating under paragraph 1 of Article 5	837.75	689.34–759.34	580.81
Grand total: all parties	1 149.75	939.34–1109.24/125	892.81

Item 7 (b): Nominations for critical-use exemptions for 2012 and 2013

29. In 2011 the Technology and Economic Assessment Panel and its Methyl Bromide Technical Options Committee received 20 nominations from four parties for critical-use exemptions. It is noteworthy that this number is 16 fewer than the number of nominations submitted in the previous round, and that two parties (Australia and Japan) have submitted phase-out plans stating that they will not submit critical-use nominations for methyl bromide use beginning in 2015. In all, the quantity of methyl bromide nominated for critical-use exemptions for 2013 has fallen from 18,704 tonnes for 2005 to 705 tonnes for 2013, a reduction of some 96 per cent.

30. The Methyl Bromide Technical Options Committee and its three subcommittees met together in Antalya, Turkey, from 14 to 18 March 2011 to evaluate the nominations for methyl bromide critical-use exemptions and to propose interim recommendations on the quantity of methyl bromide eligible for such exemptions. The Committee made interim recommendations in respect of almost all of the requests, noting reductions in the amounts requested by the United States and plans to phase out methyl bromide in Israel and Japan by the end of 2011 and 2012, respectively.

31. The outcome of the Committee's initial evaluation of critical-use nominations for 2012 and 2013 is summarized below in table 3 and an explanation of why the Committee recommended exemptions for amounts less than those sought by the requesting parties is outlined immediately below the table. A detailed discussion of the Committee's critical-use recommendations may be found in chapter 8 of volume I of the Technology and Economic Assessment Panel's 2011 progress report. As the final recommendations may be subject to the presentation of further information, the Open-ended Working Group at its thirty-first meeting is expected to ask the Panel members any questions that it may find relevant to the nominations or the review process. As is customary, the nominating parties may wish to meet the Committee bilaterally to discuss issues relevant to the Committee's initial recommendations.

Table 3

Critical-use nominations (in metric tonnes) submitted in 2011 for 2012 and 2013

<i>Party</i>	<i>Nominated for 2012</i>	<i>Nominated for 2013</i>	<i>Methyl Bromide Technical Options Committee interim recommendation</i>	
			<i>2012</i>	<i>2013</i>
Australia	-	32.134	-	32.134
Canada		13.444		13.109
Japan	-	3.317	-	3.317
United States	6.270	656.366	0.045 + amounts currently unable to be assessed	568.422 + amounts currently unable to be assessed
<i>Total</i>	<i>6.270</i>	<i>705.261</i>	<i>0.045 + amounts currently unable to be assessed</i>	<i>616.982+ amounts currently unable to be assessed</i>

32. The Methyl Bromide Technical Options Committee recommended exemptions for less than the full amounts requested by Canada and the United States. Specifically, the Committee recommended an exemption for 0.335 metric tonnes less than the amount requested by Canada for strawberry runners, keeping the recommended amount at the same level as the exemption granted in

2010 for 2012. While the Canadian nomination was the subject of a minority report issued by some Committee members (page 160, section 8.5.3, volume I), the full Panel concurred with the majority of the Committee.

33. For the United States, the Committee recommended less than the amount requested for ornamentals and strawberry fruit. The Committee was unable to assess the nominations for cured pork and research for the development of quarantine and pre-shipment treatments and for testing performance and emissions rates using films. The reasons for the reduced recommendations and the verdict of “unable to assess” are outlined below.

34. Regarding the nomination for ornamentals, the Committee recommended an exemption for 7.346 metric tonnes less than the amount requested because it believed that alternatives were available for some uses and that the party could make greater use of substrates and steam and could increase the uptake of and make improvements in methyl iodide technologies by 2013, including through improvements in the registration time and rate for methyl iodide.

35. Regarding strawberry fruit, the Panel, after reviewing the Methyl Bromide Technical Options Committee report, including the minority view (section 8.5.1, page 157, of volume 1 of the Panel’s progress report), recommended 70.551 tonnes less than the nominated amount pending substantiation of why alternatives demonstrated by the Committee could not be used. The majority view is also reflected in the comment box for the strawberry nomination in table 8-11 (see pages 17 and 173), and in section 8.6 (pages 175 and 176) of the progress report.

36. The nominations for tomatoes, peppers, cucurbits and eggplant production in the United States were also the subject of a minority report by some Committee members (section 5.2, page 159 of the Panel’s report). The Committee’s recommendations on these nominations are dependent on the provision of further data by the party by 15 July 2011 (as specified by the party) to substantiate the nominations; failing the submission of such data the nominations would not be recommended. The Panel concurred with the Methyl Bromide Technical Options Committee’s recommendations.

37. Regarding amounts nominated for research related to soils, the Committee was unable to make an assessment. For the three categories of research, the following comments were provided:

(a) For the purposes of the development of quarantine and pre-shipment treatments, the Panel suggested that the parties should consider treating such uses as exempt from control measures in the same way that quarantine and pre-shipment treatments themselves are exempted;

(b) For research related to testing performance and emission rates using films, the Committee recommended that that application should be approved as a critical-use exemption, provided that the party’s best endeavours to source the required quantities from stocks had been unsuccessful, as required by paragraph 7 of decision XVII/9. The Committee noted that the current rate of drawdown of stocks could exhaust the pre-2005 stockpile of methyl bromide in the nominating party by the end of 2011;

(c) The Committee could recommend approval of the quantities nominated for research use as a performance benchmark for research, provided, once again, that the party’s best endeavours to source the required quantities from stocks had been unsuccessful, and only in cases in which the need to benchmark the performance of potential alternatives was specifically required to meet regulatory and registration requirements. In cases in which those criteria were not met, the Committee suggested that an alternative benchmark should be used to assess comparative effectiveness. The Panel noted that the United States had submitted research plans in some cases to explain the quantities nominated for research but said that it still sought further detail on those plans and other nominated research uses.

38. Regarding amounts nominated for research on post-harvest uses, the Committee recommended for approval the research amount for cured pork for 2012 but was unable to recommend the amount for 2013. The Committee would assess the nomination in 2012 if resubmitted by the party. The Committee was also unable to assess the research amounts for emission reduction and quarantine and pre-shipment uses, pending further information from the party.

39. Regarding the request for an exemption for cured pork, the Committee was unable to recommend any part of the 3.730 tonne nomination pending the receipt of the results of large-scale trials to be conducted in spring and summer of 2011 and 2010.

40. In addition to addressing those nominations for critical-use exemptions submitted in 2011, the Panel noted that the 2015 phase-out of methyl bromide in parties operating under paragraph 1 of Article 5 was swiftly approaching. In that regard, it noted that while parties operating under paragraph 1 of Article 5 had, with the assistance of the Multilateral Fund, made tremendous progress towards phase-out some might decide to submit critical-use nominations as early as 2013. Given the

complexity of the process and the need to gather supporting data, the Panel urged relevant parties to consider the requirements for critical-use exemptions set out in the Handbook on Critical-Use Nominations for Methyl Bromide.

Item 7 (c): Quarantine and pre-shipment issues (decision XXI/10)

41. As noted in document UNEP/OzL.Pro.WG.1/31/2, this item was carried over from 2010 because the Twenty-Second Meeting of the Parties had been unable to conclude its deliberations on it. Since then, the Technology and Economic Assessment Panel has included in its progress report several items that may be relevant to the parties' continued consideration of the item. In terms of consumption of methyl bromide for quarantine and pre-shipment applications, the Panel reports that global reported consumption in 2009 was slightly under 12,000 tonnes. In terms of regional consumption, the Panel reports that the downward trends of the past few years in the Western European and others group of countries and the Asian group were reversed in 2009, mainly as a result of significant increases in quarantine and pre-shipment consumption reported by the United States (in the Western European and others group) and Israel and the Republic of Korea (in the Asian group).

42. The Panel also reports that, under the International Plant Protection Convention, subsidiary bodies are considering the development of standard methods for "treatments for soil and growing media in association with plants"; as treatments to control soil pests associated with soil on nursery plants to meet certification standards accounted for about 25 per cent of the total quarantine and pre-shipment consumption reported by parties not operating under paragraph 1 of Article 5, the Panel suggests that the parties to the Montreal Protocol may wish to invite the Convention to consider raising the priority of this aspect of its work from normal to high.

43. In terms of legislative updates regarding quarantine and pre-shipment, the Panel reported that Brazil had achieved a significant reduction of methyl bromide used for pre-shipment uses and had confirmed its intention of ceasing all uses of methyl bromide for quarantine and pre-shipment purposes by 31 December 2015. Brazil noted that, while alternatives to methyl bromide for some quarantine uses were still lacking, relevant research was under way.

44. Regarding Canada, the Panel reported that the party had declared that none of the nominations submitted in 2011 for strawberry runner production were for uses constituting quarantine and pre-shipment in Canada, either for domestic or for export purposes. The Panel also reported that the European Union's prohibition on all uses of methyl bromide, including for quarantine and pre-shipment uses, entered into force on 1 January 2010 and had been reconfirmed in February 2011 when the European Union decided to not accept a proposal to allow the use of methyl bromide for the treatment of wood packaging material in sea containers.

45. In respect of Japan, the Panel reported that the Japanese plant protection authority had published a revised plant quarantine regulation that would enter into force in September 2011. The Panel expects that the regulation, which establishes a new quarantine pest list and appropriate quarantine measures based on pest risk analysis, will reduce the need for methyl bromide for quarantine and pre-shipment compared to the previous regulation.

46. Regarding New Zealand, the Panel reports that following a two-year reassessment of controls on the use of methyl bromide for quarantine and pre-shipment, that country's Environmental Risk Management Authority decided in late 2010 to continue to permit the use of methyl bromide for quarantine and pre-shipment treatment of imports and exports. The Authority considered that a ban on methyl bromide was inappropriate because of a lack of alternatives for specific uses on imports and exports. That said, continued use of methyl bromide in New Zealand was made conditional on putting in place practices to manage the indirect effects of methyl bromide on human health and the environment, including the requirement to install recapture equipment on fumigation facilities by 2020. Lastly, in response to a recommendation by the Authority, New Zealand committed to the expenditure of \$1.85 million from government and industry sources during the period 2011–2016 on research aimed at meeting phytosanitary requirements by either capturing methyl bromide or developing a replacement. New Zealand hopes in this way to reduce the environmental harm from the use of methyl bromide significantly by 2015. In the meantime, New Zealand noted, methyl bromide was needed to meet the phytosanitary requirements of importing countries for the country's timber exports, worth \$2.2 billion.

47. The Open-ended Working Group may wish to take this update into consideration in deciding what action, if any, is appropriate for recommendation to the Twenty-Third Meeting of the Parties.

Item 7 (d): Laboratory and analytical uses of ozone-depleting substances (decisions XXI/6 and XXII/7)

48. The 2010 progress report of the Technology and Economic Assessment Panel (volume 2, section 4.4) included in an appendix detailed information on laboratory and analytical uses of ozone-depleting substances, including those uses for which no alternatives to ozone-depleting substances were known to exist. In general, the panel reported that alternatives were available for almost all uses. Based on that assessment the Panel recommended that 15 specific procedures should be eliminated from the global exemption for laboratory and analytical uses. It also recommended that three applications should be retained within the exemption, namely, the use of carbon tetrachloride for solvent reactions involving N-bromosuccinimide, as a chain transfer agent in free-radical polymerization reactions and in biomedical research. The Twenty-Second Meeting of the Parties considered the Panel's report but did not decide on these recommendations.

49. Instead, the parties focused, among other things, on how parties operating under paragraph 1 of Article 5 should treat laboratory and analytical use procedures that had previously been excluded from the exemption for parties not so operating. Those applications previously excluded from the global exemption include the testing of oil, grease and total petroleum hydrocarbons in water; the testing of tar in road-paving materials; and forensic fingerprinting. Regarding those previously excluded uses, the Twenty-Second Meeting of the Parties adopted decision XXII/7, by which it allowed parties operating under Article 5 until 31 December 2011 to deviate from the existing laboratory and analytical use bans in cases where those parties considered it justified.

50. In its 2011 progress report, the Panel stated that it had received no responses to its earlier request for more information from parties operating under paragraph 1 of Article 5 about the possible continuing need for ozone-depleting substances for those procedures previously removed from the global exemption. The Panel's discussion on the issue also addressed the parties' request for information on technical and economical aspects of continuing to allow parties operating under paragraph 1 of Article 5 to use ozone-depleting substances in those laboratory and analytical-use applications that had previously been excluded from the global exemption. In that regard, the Panel noted in section 4.4.4 of its 2011 report that the continued use of ozone-depleting substances for these applications in parties operating under paragraph 1 of Article 5 could be attributable to a lack of ozone-depleting substance alternatives or the cost of implementing new methods, including training. Regarding costs, the Panel advised that the cost of a transition to alternatives should be sustainable, even though the cost of alternative substances might be higher than those of the substances they replaced. The Panel suggested that the parties might wish to request reporting of information by parties operating under paragraph 1 of Article 5 to enable identification of the assistance needed to enable the adoption of alternatives. The Twenty-Third Meeting of the Parties may wish to take this information into account in revisiting, pursuant to decision XXII/7, the question of whether to continue to allow parties operating under paragraph 1 of Article 5 to deviate from the existing global laboratory and analytical use bans.

51. A second recent focus of the parties in the area of laboratory and analytical uses stems from decision XXI/6, which aims, among other things, to identify and mobilize changes in international standards that require the use of ozone-depleting substances. In that regard, the Panel referred to its prior work in which it identified alternatives to the use of ozone-depleting substances in many applications, and it listed a few specific methods where the use of alternatives were specified in standards devised by the American Society for Testing and Materials. The Panel also noted that it had been in touch with two major standard-setting bodies with a view to stimulating the preparation of standard methods not involving ozone-depleting substances.

52. Lastly, the Panel noted that the European Union and two other parties had, pursuant to decision XXI/6, reported to the Secretariat on the possibility of replacing ozone-depleting substances in the laboratory and analytical-use applications included by the Panel in its last report. The Panel noted that, while it considered the information submitted to be very useful, some requests made in the submissions amounted to a request for the preparation of a handbook for laboratory and analytical uses. The Panel stated that it was not in a position to prepare such a handbook and suggested that the Parties might wish to consider either funding the preparation of a handbook or requiring periodic reports from all parties on the quantities of ozone-depleting substances used in laboratory and analytical procedures, the procedures followed, the alternatives under consideration and the time that it might take them to phase out laboratory and analytical uses of ozone-depleting substances.

53. Regarding the scope of and reporting on laboratory and analytical uses, it is worthy of note that over the past 13 years a total of 28 parties (including 10 parties operating under paragraph 1 of Article 5) have during one or more years reported consumption of ozone-depleting substances for use in laboratory and analytical applications. The aggregate consumption of the 12 parties reporting consumption for such uses in 2009 was 116 tonnes, 79 tonnes of which was attributable to two parties operating under paragraph 1 of Article 5.

Item 7 (e): Joint report of the Technology and Economic Assessment Panel and the Executive Committee of the Multilateral Fund on progress in phasing out ozone-depleting substances used as process agents (decision XXI/3)

54. In decision XXI/3, the parties requested the Technology and Economic Assessment Panel and the Executive Committee of the Multilateral Fund to prepare, for the consideration of the parties, a joint report on progress in phasing out ozone-depleting substances used as process agents. While a joint report was not prepared, the report of the Executive Committee can be found as document UNEP/OzL.Pro./ExCom/62/Inf.2/Rev.1 and in the 2011 progress report, where the Panel noted the findings of the Executive Committee report. In addition, the Panel's 2011 progress report includes a discussion of additional process agent issues.

55. The report of the Executive Committee noted above describes the progress of the Multilateral Fund and the countries that it is assisting in reducing the emissions of controlled substances from process-agent use to "levels agreed by the Executive Committee to be reasonably achievable in a cost-effective manner without undue abandonment of infrastructure", as called for in decision X/14. Specifically, it lists the process-agent projects and activities that have been funded by the Multilateral Fund and provides information on the levels of funding approved and either the reported or confirmed impact. It also presents information on progress with projects reported by the implementing agencies.

56. The Multilateral Fund has approved process-agent projects in Brazil, China, Colombia, the Democratic People's Republic of Korea, India, Mexico, Pakistan and Romania designed to reduce approximately 19,700 ozone-depleting-potential tonnes (ODP-tonnes) of consumption and 37,000 ODP-tonnes of production at a cost of approximately \$120 million. Brazil reports zero consumption for process-agent uses in 2008 and 2009 notwithstanding its agreement with the Executive Committee, which allows consumption of 2 ODP-tonnes per year of carbon tetrachloride for the production of chlorine through 2013. In Romania, the production of carbon tetrachloride and its consumption as a process agent is reported to have ceased at the end of 2007, and unused project funding is due to be returned to the Multilateral Fund. In Mexico, the conversion project funded resulted in a total phase-out of the country's use of ozone-depleting substances as process agents. Likewise, the Democratic People's Republic of Korea reports zero consumption for process-agent applications, even though two related conversions have not yet been completed.

57. In India, carbon tetrachloride is being phased out as a process agent through a sector plan for both production and consumption, and the 2009 verification report indicates that consumption of carbon tetrachloride had fallen to 29.7 ODP-tonnes, below the limit established by the agreement with the Executive Committee. In 2010 India was required completely to phase out the use of carbon tetrachloride as a process agent. With regard to China, verification reports to the Executive Committee note that the residual consumption of carbon tetrachloride associated with process-agent applications in China amounted to 4,515 tonnes in 2009, a level that appears to be below the level agreed between China and the Executive Committee for that year. By 2010, however, process-agent consumption of carbon tetrachloride is due to be reduced to a maximum of 994 ODP-tonnes. In general, the Executive Committees report notes that the dominant strategy for achieving the necessary reductions in consumption for the period 2008–2010 continued to rely predominantly on conversion to non-ozone-depleting-substance technology and plant closure.

58. Section 4.3.1 of the Panel's 2011 progress report includes an update on the status of process-agent uses and suggestions for changes to tables A and B of decision X/14, as amended by subsequent decisions. Specifically, the Panel notes that after a review of information on process agents provided by the parties and included in the above-noted report of the Executive Committee, it has determined that 27 of the process-agent uses listed in table A are no longer in use, and therefore can be removed from that table. The removal of those 27 applications would leave 14 applications that still use ozone-depleting substances as process agents. Table 4 lists the applications currently on the list in table A and the Panel's recommendation for their inclusion on or deletion from a revised table A.

Table 4

Current process-agent uses in tables A and B of decision X/14 and recommendations of the Technology and Economic Assessment Panel for changes thereto

<i>Process agent Application</i>	<i>Substance</i>	<i>Decision XXII/8 No.</i>	<i>Parties</i>	<i>Advice to remove from table A?</i>
Elimination of NCl ₃ in chlor-alkali production	CTC	1	EU, Israel and US	No
Chlorine gas recovery by tail gas absorption in chlor-alkali production	CTC	2	EU and US	No
Production of chlorinated rubber	CTC	3	EU	No
Production of endosulfan	CTC	4	-	Yes
Production of chlorosulfonated polyolefin (CSM)	CTC	5	China and US	No
Production of aramid polymer (PPTA)	CTC	6	EU	No
Production of synthetic fibre sheet	CFC-11	7	US	No
Production of chlorinated paraffin	CTC	8	-	Yes
Photochemical synthesis of perfluoropolyetherpolyperoxide precursors of Z-perfluoropolyethers and difunctional derivatives	CFC-12	9	EU	No
Preparation of perfluoropolyether diols with high functionality	CFC-113	10	EU	No
Production of cyclodime	CTC	11	EU	No
Production of chlorinated polypropene	CTC	12	China	No
Production of chlorinated ethylene vinyl acetate (CEVA)	CTC	13	China	No
Production of methyl isocyanate derivatives	CTC	14	China	No
Production of 3-phenoxy benzaldehyde	CTC	15	-	Yes
Production of 2-chloro-5-methylpyridine	CTC	16	-	Yes
Production of imidacloprid	CTC	17	-	Yes
Production of bupropfenin	CTC	18	-	Yes
Production of oxadiazon	CTC	19	-	Yes
Production of chloradized N-methylaniline	CTC	20	-	Yes
Production of 1,3- dichlorobenzothiazole	CTC	21	-	Yes
Bromination of a styrenic polymer	BCM	22	US	No
Synthesis of 2,4-dichlorophenoxyacetic acid (2,4-D)	CTC	23	-	Yes
Synthesis of di(-2-ethylhexyl) peroxidedicarbonate (DEHPC)	CTC	24	-	Yes
Production of high modulus polyethylene fibre	CFC-113	25	US	No
Production of vinyl chloride monomer	CTC	26	-	Yes
Production of sultamicillin	BCM	27	-	Yes
Production of prallethrin	CTC	28	-	Yes
Production of o-nitrobenzaldehyde	CTC	29	-	Yes
Production of 3-methyl-2-thiophenecarboxaldehyde	CTC	30	-	Yes
Production of 2-thiophenecarboxaldehyde	CTC	31	-	Yes
Production of 2-thiophene ethanol	CTC	32	-	Yes
Production of 3,5-dinitrobenzoyl chloride (3,5-DNBC)	CTC	33	-	Yes
Production of 1,2-benzisothiazol-3-ketone	CTC	34	-	Yes
Production of m-nitrobenzaldehyde	CTC	35	-	Yes
Production of Tichlopidine	CTC	36	-	Yes
Production of p-nitro benzyl alcohol	CTC	37	-	Yes
Production of tolclifos methyl	CTC	38	-	Yes
Production of polyvinylidene fluoride (PVdF)	CTC	39	-	Yes
Production of tetrafluorobenzoyl ethyl acetate	CTC	40	-	Yes
Production of 4-bromophenol	CTC	41	-	Yes

59. Regarding the parties' request in decision XXI/3 that all parties clarify their use of ozone-depleting substances as process agents, the Panel reports that as at 1 March 2011, 93 parties had confirmed that they do not employ ozone-depleting substances for such uses. Information from parties reporting such uses, including information on consumption, make-up, emissions and maximum emissions, is included in the form of a revised table B below:

Revised table B of decision X/14

<i>Party</i>	<i>Make-up or consumption 2009</i>	<i>Maximum make-up or consumption</i>	<i>Emissions 2009</i>	<i>Maximum emissions</i>
European Union	669	1 083	1.6	17
United States	No data	2 300	47.1	181
Russian Federation	No data	800	No data	17
Israel	2.4	3.5	0	0
Brazil	0	2.2 ^b	0	2.2 ^b
China	313	1103	No data	1103
Total	982	5292	49	1320

60. The Open-ended Working Group may wish to consider the above issues and make recommendations, as appropriate, to the Twenty-Third Meeting of the Parties.

Item 7 (f): Investigation by the Technology and Economic Assessment Panel into alternatives to ozone-depleting substances in exempted feedstock and process-agent uses and assessment of the feasibility of reducing or eliminating such uses and related emissions (decision XXI/8)

61. The Panel's response to the issues raised in decision XXI/8 can be found in sections 4.3.3, 4.7 and 4.8 of volume I of its 2011 progress report. As to alternatives to the use of ozone-depleting substances for exempted process-agent uses, the Panel reports in section 4.3.3 that in few of the cases historically reviewed by the Chemicals Technical Options Committee, especially those in which carbon tetrachloride is used as a process agent, were detailed reasons offered regarding the use of carbon tetrachloride rather than an alternative. The committee therefore considered it likely that the possible use of alternatives had not been investigated and that carbon tetrachloride was used because that was the solvent used in laboratory work that led to the patents and industrial processes initially established. Furthermore, it noted that changing to an alternative solvent could be difficult owing to plant design considerations: established plants might well be solvent specific and thus parties might find it difficult to change a solvent from an economic point of view. In terms of emissions from process-agent uses, the Panel provided the revised table B, which they noted was incomplete.

62. Regarding feedstocks, the Panel notes in section 4.8 of the 2011 progress report that carbon tetrachloride, trichloroethane, CFCs and HCFCs are ozone-depleting substances that serve as chemical feedstocks in the preparation of other chemicals by facilitating the introduction of fluorine atoms into molecular structures. The Panel reports that there are no technologically and economically viable alternatives to any known use of these substances at the present time. Citing a number of common feedstock applications for these substances, the Panel noted that emissions of ozone-depleting substances could occur during production, storage, transport and necessary transfers, and through fugitive leaks of intermediates. The Panel noted that its 2010 report had included an estimate of total emissions of 4,450 metric tonnes of ozone-depleting substances from feedstock applications, representing about 1,660 ODP-tonnes. Since global data on the production and use of ozone-depleting substances as feedstocks do not exist, however, and since there is no mandatory reporting of ozone-depleting substances used for feedstocks by use, emissions or volumes, estimates are likely to be uncertain and subject to disagreement. In that regard, the Panel suggested that, to have a better understanding of feedstock uses and emissions, parties might wish to consider requiring the reporting of feedstock uses of ozone-depleting substances.

63. Lastly, in respect of the parties' request that the Panel once again consider the discrepancy between bottom-up and top-down estimates, the Panel notes that the difference remains unexplained in spite of year-by-year reconsideration of possible emissions from industrial and natural sources of carbon tetrachloride and consideration of the revision of the atmospheric lifetime of carbon tetrachloride by the Scientific Assessment Panel. While the Panel had at its disposal some additional data from the European Pollutant Release and Transfer Register in 2010 indicating previously unreported emissions of carbon tetrachloride from industrial facilities, the Panel suggests that the quantities revealed by those data cannot explain the current discrepancy, but suggests that further work

in other jurisdictions could reveal sources not currently being reported to the Secretariat. Furthermore, it notes that, while it is likely that chemical manufacture using carbon tetrachloride as feedstock would also result in emissions, as noted above, the level of such emissions is currently speculative. Accordingly, it suggests that the parties may wish to consider requiring reporting of feedstock uses of carbon tetrachloride and emissions therefrom.

Agenda item 8: Environmentally sound management of banks of ozone-depleting substances (decision XXI/2, paragraph 7, and decision XXII/10)

64. As noted in document UNEP/OzL.Pro.WG.1/31/2, the parties in decision XXII/10 requested the Technology and Economic Assessment Panel to evaluate and recommend appropriate destruction and removal efficiency criteria for the destruction of methyl bromide and other substances, to review the list of existing and emerging destruction technologies adopted by parties in the context of these criteria and provide an evaluation of their performance and commercial and technical availability, and to develop criteria that should be used to verify the destruction of ozone-depleting substances, taking into account the destruction and removal efficiency criteria for the relevant substances. To facilitate this task, the decision also invited the submission of relevant data; in that regard, the Panel reports, the Secretariat received input from five emerging technology proponents and two firms.

65. The Panel mobilized a task force of experts to assist in responding to decision XXII/10. In considering destruction and removal efficiency criteria, the Panel recalled that as far back as 2002 it had noted that data limitations prevented it from recommending the use of destruction efficiencies instead of destruction and removal efficiencies. Destruction efficiencies are more comprehensive because they include losses at various points in the destruction process; the Panel did not recommend their use in 2002, however, because data on losses from other process sources were scarce.

66. The Panel now reports that over the years the use of destruction efficiencies has become more prevalent. Experts in the field now suggest that best available destruction technologies should be able to achieve a destruction efficiency of 99.99 per cent and destruction and removal efficiencies of 99.9999 per cent; this may be compared to the more modest 99.99 per cent destruction and removal efficiencies that is specified in the current Protocol criteria. The Panel also noted that another source (the United States Clean Air Act) required destruction facilities to achieve a minimum destruction efficiency of 98 per cent.

67. Given these factors, the Panel suggests that the opportunity exists for the Protocol to consider a number of options, including the following. First, the parties could consider making the requirement more stringent by moving from the current value of 99.99 per cent to a destruction efficiencies value. Second, the parties might wish to lower the threshold to, for example, the current United States minimum destruction efficiencies requirement of 98 per cent. Third, taking into consideration the gaseous nature of ozone-depleting substances, the parties could opt for a destruction efficiency of 99 per cent or 99.5 per cent. Fourth, taking into consideration the considerable losses occurring during recovery and prior to destruction, and the desirability of encouraging destruction, the parties might wish either to maintain destruction and removal efficiency at 99.99 per cent or lowering it to 99.9 per cent. Lastly, the parties might consider revising the original decision and taking a more pragmatic way forward with the goal of maximum ozone-depleting substance recovery and destruction. Regarding toxic breakdown products, the Panel recommends that the Parties work with their regulatory authorities to consider moving to a more stringent toxicity equivalency factor of 0.1 ng -TEQ Nm³.

68. Regarding methyl bromide, the Panel notes that significant quantities of it have been destroyed even though it is the most difficult ozone-depleting substance to destroy by incineration. After reviewing the limited data available, the task force saw no reason why the destruction and removal efficiency for methyl bromide should be set at an initial figure that differed from that used for other ozone-depleting substances (99.99 per cent). As with other ozone-depleting substances, however, the opportunity exists to round this down in due course to a destruction and removal efficiency of 99.9 per cent or to switch to the more comprehensive destruction efficiencies measure. If a decision on this issue was not imminent, it was suggested, there would be an opportunity to solicit more information on methyl bromide destruction experiences from the destruction sector. In terms of by-products, and considering the work undertaken to date, the task force recommended a limit of 0.1 ng TEQ Nm³ in order to align indicators.

69. In terms of an evaluation of new technologies, the Panel noted that its 2002 task force report identified 45 distinct technologies, of which only 16 appeared to meet the screening criteria used at that time. Of those, 12 had been approved by parties at that point and four had been characterized by the Panel as having high potential. In the 2010 progress report, the Chemicals Technical Options

Committee highlighted five emerging technologies. It then reviewed them, along with an additional two technologies related to methyl bromide.

70. The four technologies identified as being of high potential in the 2002 report were AC plasma, CO₂ plasma, gas phase chemical reduction and solvated electron decomposition. Regarding AC plasma and CO₂ plasma, the task force concluded that while they remained of high potential for ozone-depleting substance destruction, the published literature on their use for ozone-depleting substance was limited, leaving it unclear whether they could be added to the approved technologies list. Accordingly, it suggested that parties might wish to consider having the Secretariat call for further information on these technologies. In the case of gas phase chemical reduction and solvated electron decomposition, the Panel concluded that they were less likely to succeed unless the ozone-depleting substance to be destroyed was injected as a minor part of another waste stream. If that were not the case, however, it would make assessment of destruction efficiencies more challenging. There is also some question about the widespread commercial adoption of these technologies, which could temper the Panel's earlier optimism. With these factors in mind, the task force considered that it might be advisable to downgrade these two technologies to screened out status.

71. Table 5 summarizes the information received on the seven emerging technologies reviewed by the task force:

Table 5

Summary of the seven emerging technologies reviewed by the task force

Proponent	Technology	Feed rate of ODS	Against criteria 99.99% DRE Dioxins < 0.1 ng ITEQ m ⁻³	Comment
SGL Carbon GmbH	Refrigerant gas, air and fuel in porous reactor at high temp for short time.	2 -10 kg/h for HCFC-22 and HFC-134a; 60 kg/h for CCl ₄	99.99% DRE (but 95% for dilute sources); dioxins < 0.1 ng m ⁻³	Already operated at Frankfurt Main by Akzo; pilot plant at TU Bergakademie, Freiberg.
Lesni A/S	Catalytic destruction of fluorocarbons and hydrocarbons vapour from foams at modest temperatures.	60 kg/h for CFC-11, CFC-12, HFC-134a and pentane	>99.9% DRE; dioxins 0.2 ng Nm ⁻³ (0.5 ng Nm ⁻³ for dilute gases).	Operated for 7 years in Sweden, Denmark, and UK.
ASADA Corporation	Plasma destruction, small scale	Typically, 2 kg/h for HCFC-22, HFC-134a, 1 kg/h for CFC-12	DRE >99.99%; dioxins < 0.000002 ng-ITEQ m ⁻³	Operated at Matsuzaka-city, Mie prefecture and at Giacomino, Argentina.
Midwest Refrigerants LLC	Thermal reaction of ODS with hydrogen and carbon monoxide.	In a pilot plant, 5.4 – 7.3 kg/h (12 – 16 lbs/h) for CFC-12	DRE >99.99% reported; 2,3,7,8-PCDD 0.0095 ng m ⁻³ reported	Halogens recovered as salable hydrogen halides or halide salts. Analytical verification and process flow understanding required.
Newcastle, Australia	Thermal conversion of fluorocarbons to vinylidene chloride (described in two US patents).	Mainly, halon-1301 and halon-1211; gas feed rate 10 cm ² s ⁻¹	Conversion of reactant halons was 99.4% at 1173 K (900 degree C)	Catalytic reactions of fluorocarbons with hydrocarbons (natural gas) in a small scale-reactor; fundamental research stage
SRL Plasma	Plasma destruction of methyl bromide	31 kg over 100 minutes	DRE >99.5% claimed but 2-3% of MB recovered; may meet dioxin criterion if bromo-dioxins have ITEQ similar to chlorinated.	Trial processed
Nordiko Quarantine Systems Pty Ltd	Adsorption of methyl bromide on activated carbon and subsequent destruction by chemical, biological or thermal means.	Not quantitative amount of methyl bromide reported	DRE of 96.02%. claimed for methyl bromide adsorbed on activated carbon in an ambient conditions for 16 months	

72. In closing, the Panel noted that the technical adequacy of the initial submissions received varied significantly and that much of the data contained in table 5 were accumulated through bilateral communications between task force members and the technology proponents. As this was not always an efficient process, the Panel suggested that the parties might wish to consider developing a specific pro forma form for the submission of information in the future.

73. On the basis of its review, the task force made the following recommendations:

SGL Carbon: recommended for approval

Lesni A/S: high potential

ASADA: recommended for approval

Midwest Refrigerants: recommended for approval

University of Newcastle: recommended for approval

SRL plasma for methyl bromide destruction: high potential (insufficient information)

Nordiko for methyl bromide: unable to assess (not linked with any specific destruction technology).

74. In response to the parties' request for the development of criteria to validate amounts of ozone-depleting substances destroyed, the task force undertook a detailed evaluation of current destruction guidelines and criteria, including those dealing with end of useful life destruction and the code of good housekeeping agreed by the parties in decision IV/11 and the Panel's 2003 update thereto.

75. Following that review, the Panel proposed a voluntary annex designed to provide a division between the code of good housekeeping statements on technical capability and the verification procedures necessary to ensure that minimum standards of verified destruction are achieved. Accordingly, the proposed code, which can be found in section 5.6 of the Panel's 2011 report, seeks to ensure that destruction occurs appropriately, that quantities of destroyed ozone-depleting substances are identified by ozone-depleting substance type, either on their own, in blends or in products, and that there is a methodology for verifying that the requisite practices have been observed and that noted quantities of ozone-depleting substance have been reduced in an amount that corresponds to the amounts claimed as destroyed.

76. While the Panel's report on destruction issues was expected to include a response to decision XXI/2 on national or regional approaches to the destruction of ozone-depleting substances, its work on this issue has not yet been completed.

Agenda item 9: Synthesis report of the 2010 assessments of the Montreal Protocol assessment panels

77. The 2010 synthesis report, which synthesizes the 2010 reports of the Technology and Economic Assessment Panel, the Environmental Effects Assessment Panel and the Scientific Assessment Panel, will be translated into all languages along with an executive summary.

Agenda item 10: Potential areas of focus for the assessment panels' 2014 quadrennial reports

78. The Open-ended Working Group may wish to initiate a discussion on any guidance that the parties may wish to provide for the 2014 quadrennial reports and forward the conclusions from any such discussion to the Twenty-Third Meeting of the Parties for consideration and possible action.

Agenda item 11: Status of Nepal relative to the Copenhagen Amendment to the Montreal Protocol

79. As noted in document UNEP/OzL.Pro.WG.1/31/2, in January 2011 the Ozone Secretariat received a letter from the Government of Nepal dated 4 January 2011 asking for an item to be placed on the agenda of the thirty-first meeting of the Open-ended Working Group and the Twenty-Third Meeting of the Parties. Specifically, the letter noted that the Government of Nepal had initiated the process for ratifying the Copenhagen, Montreal and Beijing amendments to the Montreal Protocol as early as 2001. As a result of frequent changes in the Government, the situation in the country and more pressing and urgent issues, however, the ratification process had not yet been accomplished. The Government said that, those issues notwithstanding, it intended to ratify all the amendments at the earliest point possible and that it had taken many steps to control HCFCs in the meantime. The Government went on to outline how those steps conformed to or exceeded the requirements of the Copenhagen Amendment, including through a capping of HCFC consumption.

80. In the light of the facts outlined in the letter, the Government requested the Secretariat to include its situation on the agendas for the current meeting and the Twenty-Third Meeting of the Parties for consideration in the light of paragraphs 8 and 9 of Article 4 of the Protocol. Those paragraphs allow a country to avoid the application of trade sanctions under the Protocol and its amendments by demonstrating that it is in full compliance with their provisions.

81. In this case, the submission of Nepal concerns the HCFC provisions of the Copenhagen Amendment. It should be noted that, by decision XX/9, the application of trade sanctions against parties operating under paragraph 1 of Article 5 who are not parties to the Copenhagen Amendment was deferred until 2013. It should also be noted that Nepal's HCFC situation is the subject of a previous decision by the Executive Committee of the Multilateral Fund.

82. At its sixty-second meeting the Executive Committee considered an HCFC phase-out management plan proposal from Nepal. Some members noted that, under the HCFC guidelines, the ratification of the Copenhagen Amendment was a prerequisite to Multilateral Fund funding for HCFC activities. The Executive Committee decided, in decision 62/53, to approve stage I of Nepal's proposed HCFC phase-out management plan for the period 2010–2020, on the understanding that by the time of the Twenty-Third Meeting of the Parties Nepal would have officially deposited its instrument of ratification of the Copenhagen Amendment or submitted an official request to the Twenty-Third Meeting of the Parties to be considered in full compliance with the HCFC control provisions pursuant to paragraphs 8 and 9 of Article 4 of the Montreal Protocol.

83. The Working Group may wish to discuss the matter in the light of the information available.

II. Other issues that the Secretariat would like to bring to the parties' attention

A. Amendment of the Harmonized System nomenclature for ozone-depleting substances

84. As reported previously, on 26 June 2009 the Customs Cooperation Council of the World Customs Organization adopted a recommendation to the Contracting Parties to the International Convention on the Harmonized Commodity Description and Coding System that the nomenclature of the Harmonized System should be amended in a number of respects. The recommended amendments include changes under heading 29.03 of the nomenclature relating to a number of ozone-depleting substances. Insofar as they relate to heading 29.03 the recommended amendments read as follows:

“Subheadings 2903.4 to 2903.69. Delete and substitute:

“- Halogenated derivatives of acyclic hydrocarbons containing two or more different halogens:

2903.71 -- Chlorodifluoromethane

2903.72 -- Dichlorotrifluoroethanes

2903.73 -- Dichlorofluoroethanes

2903.74 -- Chlorodifluoroethanes

2903.75 -- Dichloropentafluoropropanes

2903.76 -- Bromochlorodifluoromethane, bromotrifluoromethane and dibromotetrafluoroethanes

2903.77 -- Other, perhalogenated only with fluorine and chlorine

2903.78 -- Other perhalogenated derivatives

2903.79 -- Other - Halogenated derivatives of cyclanic, cyclenic or cycloterpenic hydrocarbons:

2903.81 -- 1,2,3,4,5,6-Hexachlorocyclohexane (HCH (ISO)), including lindane (ISO, INN)

2903.82 -- Aldrin (ISO), chlordane (ISO) and heptachlor (ISO)

2903.89 -- Other - Halogenated derivatives of aromatic hydrocarbons:

2903.91 -- Chlorobenzene, o-dichlorobenzene and p-dichlorobenzene

2903.92 -- Hexachlorobenzene (ISO) and DDT (ISO) (clofenotane (INN), 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane)

2903.99 -- Other.”

85. The latest changes in the harmonized codes for HCFCs are based on a proposal that was initially put forward by Mauritius to the World Customs Organization in 2008. The changes were communicated to all parties to the Montreal Protocol for their information in an information note by the Secretariat of 15 November 2008 (UNEP/OzL.Pro.20/INF/13).

86. In accordance with World Customs Organization rules, contracting parties to the Harmonized System Convention were given six months to object to any of the amendments recommended above. That period having now passed, the amendments (excluding those objected to during the six-month time frame) will enter into force for all contracting parties on 1 January 2012.

B. Observations related to reporting: decimal places

87. In 2006, the Secretariat brought to the attention of the Implementation Committee the issue of treatment of data in respect of very small (de minimis) quantities of ozone-depleting substances relative to compliance with the Montreal Protocol. At that time, and at the Committee's request, the Secretariat circulated a paper requesting guidance from the parties regarding the number of decimal points that should be used in respect of quantities of ozone-depleting substances in assessing compliance. The Eighteenth Meeting of the Parties rejected a proposal for further study of the issue and concluded that the Secretariat should revert to its method of rounding to one decimal place (see paragraph 147 of the report of the Eighteenth Meeting of the Parties (UNEP/OzL.Pro.18/10)).

88. Since the Eighteenth Meeting of the Parties the parties have adopted an adjustment to the Protocol's HCFC control provisions. As the parties are aware, HCFCs have a significantly lower ozone-depleting potential than do CFCs. Since it is rounded to one decimal place, the HCFC consumption data provided by the Secretariat on the internet and to the Implementation Committee will show zero consumption for the many parties whose consumption is lower than 0.05 ODP-tonnes. Those parties may therefore be considered to be in compliance with the HCFC phase-out even though their consumption may be several metric tonnes. This situation contradicts the letter and spirit of Articles 2 and 5 of the Montreal Protocol, which establish zero production and consumption as the measure of full compliance with the Protocol. Furthermore, and given the mandate of the Multilateral

Fund to enable compliance, a question may arise as to whether such parties are eligible for assistance from the Fund to eliminate their consumption of HCFCs.

89. As the issue concerns past decisions of the Meeting of the Parties related to compliance by individual countries, it is important to note that some of those decisions included agreements for reductions to fractions of a tonne expressed to as many as three decimal places. While the specificity in those decisions might appear to control, that the parties' direction on the use of decimal places came later in time could lead to confusion.

90. Given the factors noted above, the Secretariat intends to raise this issue with the Implementation Committee and is taking this opportunity to notify the parties that it may be raised for their consideration at a meeting of the parties.

C. Update of n-PB

91. Decision XIII/7 requested the Technology and Economic Assessment Panel to report annually on n-PB use and emissions and steps being taken to address them. In that regard the Panel reported in section 4.6.2, page 59, of its 2011 progress report that the use of n-PB had been approved for selected applications as a substitute for CFC-113 and methyl chloroform in metals, electronics and precision cleaning under the Significant New Alternatives Policy of the United States Environmental Protection Agency. It also noted that n-PB had been registered under the European Union's REACH (Registration, Evaluation and Authorization of Chemicals) programme. Having considered the current status, the Panel suggests that the parties may wish to reconsider decision XIII/7.

D. Cooperation with other international agreements

1. International Plant Protection Convention

92. Consistent with decisions XX/6 and XXI/10, the Technology and Economic Assessment Panel and the Secretariat have been working closely with the International Plant Protection Convention and its Commission on Phytosanitary Measures on activities relevant to methyl bromide for quarantine and pre-shipment uses. In that regard, the Panel reports that bodies under the Convention have examined additional work directed toward the adoption of a revised version of ISPM-15, which would include an expansion of the guidelines for the heat treatment of solid wood packaging material to include two additional treatment methods, namely, microwave irradiation and sulfuryl fluoride, as alternatives to the use of heat and methyl bromide treatment for disinfecting wood packaging material. A revised version of ISPM-15 was submitted for country consultation in June 2010 and is expected to be adopted in 2012. In addition, work is continuing to obtain further information on methyl isothiocyanate and sulfuryl fluoride (Ecotwin mixture); hydrogen cyanide; and methyl iodide as potential treatments for wood packaging material. All of those treatments have been accorded high priority because of the need to add other treatments to ISPM-15.

93. It is also worthy of note that a technical panel under the Convention is working on a glossary of phytosanitary terms and in that context is examining the terminology of the Montreal Protocol. The Panel reports on the degree of overlap between terms, such as pre-shipment, employed under the Montreal Protocol and the glossary, including the degree of overlap in their definitions. A draft was circulated to the Standards Committee for member consultation, which is expected to begin in June 2011. The Ozone Secretariat, with input from the Methyl Bromide Technical Options Committee, has already reviewed the draft and provided comments. During the member consultations the parties to the Montreal Protocol that are also parties to the Convention will be able to provide comments at the national level through their Convention contact points. The Ozone Secretariat will keep the parties informed of the process. Neither the implications of the work being done under the Convention on the definitions of quarantine and pre-shipment used in the Montreal Protocol, nor any action that the parties to the Montreal Protocol might wish to consider as a result of that work, were discussed in the reports circulated by the Convention secretariat for the country consultations.

2. United Nations Framework Convention on Climate Change

94. The Executive Secretary of the Ozone Secretariat was requested to participate in a side event at the recent climate change meeting in Bonn, Germany. The event, which was on reductions in global-warming chemicals in addition to those controlled under the Framework Convention on Climate Change, served as a good forum for the discussion of the climate change benefits of phasing out ozone-depleting substances that are also global-warming chemicals, including the continuing efforts to phase out HCFCs.

E. Selection of venues for Montreal Protocol meetings

95. The Secretariat would like to apologize to the parties and meeting participants for the adjustment of the venues for Protocol meetings that have taken place over the past two years. In that regard, the Secretariat wishes to explain the various factors that go into the selection of meeting venues, including in particular the venues for meetings of the Open-ended Working Group.

96. The parties to the Protocol have, since the inception of a dedicated budget for the Secretariat, provided the Secretariat with a level of funding that facilitates both the administration of the Open-ended Working Group and the ability to fund the participation in the meetings of the Working Group of a limited number of developing-country representatives. Funding for developing country participation has since the Thirteenth Meeting of the Parties been set at \$300,000. That amount, however, has been generously supplemented by additional contributions from a number of parties. Sweden and Norway, for the past several years, have provided additional funding each year to enable the enhanced participation of representatives from the group of least developed countries. Denmark has occasionally made similar contributions. Together with the \$300,000 budget provided by the parties, these contributions have facilitated the participation of a larger group of developing countries than would otherwise be the case.

97. That said, costs are continuing to rise and the Protocol has added a substantial number of new parties over the last decade; it is now the first truly global treaty ever negotiated in the United Nations. Consequently, the Secretariat strives to support the participation of as many parties as possible in Protocol meetings. One key factor in maximizing participation is holding the meetings of the Working Group in the lowest-cost venue that meets applicable standards for internet access and the safety and comfort of representatives. Several factors go into the determination of the least-cost venue that meets these criteria, including the cost of renting the venue and providing security for the meeting (if any), the cost of transporting Secretariat and conference service staff to the venue, the daily subsistence allowance that is required to be paid for sponsored participants and the Secretariat staff at the various venues, and the general situation in the venue.

98. These factors change over time as a result of movements in exchange rates, changes to meeting venues and changes in host countries. Bangkok, for example, has been for the past several years the least-cost venue for Working Group meetings. The facilities at the United Nations Conference Centre are offered on a rent-free basis, the cost of travel of the Secretariat and conference services staff to Bangkok is very reasonable, and Bangkok offers skilled and competitively priced meeting assistance, a multitude of good hotels and reasonably priced food. The daily subsistence allowance is also relatively modest. Consequently, when meetings are held in Bangkok the Secretariat has been able to sponsor a representative from every party that has requested it.

99. Changes being made to the conference facilities during the Twenty-Second Meeting of the Parties caused some disruption to internet access, however, and the use of the scenic circle in front of the conference centre as a public gathering point has the potential to impede access to the venue. The latter point was judged to be relevant to the thirty-first meeting of the Open-ended Working Group. As noted in the letters sent to the parties, new elections had been called for 3 July; elections and the announcement of election results spark public gatherings in all countries, and it was therefore felt that there was a risk that such gatherings might affect the meeting and had to be taken into account in deciding the meeting venue. In terms of cost, and as a result of the changing situations in the countries in which ozone meetings are usually held, the Secretariat annually reviews the cost of holding meetings at various venues. In that regard, the cost of holding the Open-ended Working Group's thirty-first meeting in Montreal, Canada, for example, is about \$160,000 more than holding it in Bangkok. The difference is attributable to a rental fee for the use of the conference facilities, additional travel costs of Secretariat and conference services staff, and a higher daily subsistence allowance. While the overall added expense is somewhat reduced when our meetings are held back to back with those of the Multilateral Fund (due to the sharing of travel costs of some participants and staff), holding the meeting at a venue other than the least-cost venue means higher cost.

100. With regard to meetings of the parties, the Secretariat strives to reach an early agreement with host country Governments on the dates of the meetings to enable effective planning on the part of all participants. Such early planning is most often beneficial, but sometimes it paradoxically leaves more time for intervening actions to thwart the best of plans. In the case of the generous offer of Indonesia to host the joint ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties in Bali, the very limited window of time available to global leaders led to Indonesia's need to hold a very important meeting of those leaders during the same week that the Government and the Secretariat had jointly proposed for the joint ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties.

Consequently, and out of a desire to maximize the comfort of participants at both meetings, the dates for the joint ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties had to be moved back a week.

101. The Secretariat is grateful for the parties' understanding that it is occasionally necessary to change the time and venue of meetings. The Secretariat will continue to consider the factors noted above carefully and strive to select venues that reduce cost, maximize participation and otherwise meet the parties' needs. Should the need again arise to adjust a meeting venue and/or dates the Secretariat will make all efforts to minimize inconvenience to the parties.

F. New Ozone Secretariat website

102. The new Ozone Secretariat website was launched in its final testing phase in June 2011. The Secretariat welcomes comments and suggestions to improve the new website (http://ozone.unmfs.org/new_site and http://ozone.unep.org/new_site) by 31 August 2011 in order to launch the final English version by 16 September 2011, the International Day for the Preservation of the Ozone Layer.

103. The French and Spanish versions of the website will be launched at the joint ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol. The Secretariat regrets the delay caused by the need to translate the new site and plans to keep the current website running in parallel in all three languages until the end of 2011 to reduce inconvenience.
