



**United Nations  
Environment  
Programme**

Distr.: General  
3 November 2009

Original: English



**Twenty-First Meeting of the Parties to the  
Montreal Protocol on Substances that  
Deplete the Ozone Layer**  
Port Ghalib, Egypt, 4–8 November 2009  
Item 8 (c) of the agenda for the preparatory segment\*  
**Issues related to methyl bromide:  
quarantine and pre-shipment applications of methyl bromide**

**Summary report by the co-chairs of the workshop on methyl bromide  
use for quarantine and pre-shipment purposes**

**Introduction**

1. As requested by decision XX/6 of the Twentieth Meeting of the Parties to the Montreal Protocol, a workshop on methyl bromide use for quarantine and pre-shipment purposes was held in Port Ghalib, Egypt, on 3 November 2009, immediately prior to the Twenty-First Meeting of the Parties to the Montreal Protocol.
2. The co-chairs of the workshop prepared the current summary report of the key issues raised during the workshop to assist the Twenty-First Meeting of the Parties in its deliberations on quarantine and pre-shipment applications of methyl bromide.

**I. Scientific background**

3. The key issues from the first session on scientific background were the following:
  - (a) Atmospheric methyl bromide responds more rapidly to emission decreases than most other ozone-depleting substances owing to its short lifetime;
  - (b) Without the declines observed for atmospheric methyl bromide through 2007 the overall decline in atmospheric halogen (effective equivalent chlorine, or EECI) would be approximately 25 per cent less;

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\* UNEP/OzL.Pro.21/1.

(c) Emissions of methyl bromide from quarantine and pre-shipment applications accounted for 50 per cent of total fumigation-related emissions of methyl bromide in 2007 and were increasing in relative importance;

(d) Methyl bromide used for quarantine and pre-shipment accounted for 1 per cent of ozone-depleting halogen in the 2007 atmosphere (as EECI) and 2.9 per cent (or 6.5 ODP-ky) of total emissions of ozone-depleting substances in 2007;

(e) From scenarios calculated in the 2007 Scientific Assessment Panel report, eliminating annual quarantine and pre-shipment use of 10.7 kt/yr from 2015 to 2050 would reduce total effective equivalent stratospheric chlorine (EESC) integrated from 2007 to 2050 by 3.2 per cent.

## **II. Background information and presentation of the Quarantine and Pre-Shipment Task Force final report**

4. The key issues raised and conclusions drawn during the second session of the workshop, on the final report of the Quarantine and Pre-Shipment Task Force, are summarized below.

### **A. Presentations by the Quarantine and Pre-Shipment Task Force**

5. Reported production of methyl bromide for exempted quarantine and pre-shipment uses between 1999 and 2007 was approximately constant on an annual basis and roughly at the same level as reported consumption, or about 11,000 metric tonnes per year.

6. In 2007 reported consumption for quarantine and pre-shipment in Parties operating under paragraph 1 of Article 5 of the Montreal Protocol (Article 5 Parties) exceeded that in non-Article 5 Parties for the first time. Article 5 Party consumption was 24 per cent of total global consumption in 2000 and 54 per cent in 2007. There is a discrepancy of about 1,300 tonnes for non-Article 5 Parties for 2007 between total use estimated by bottom-up analysis and consumption reported under Article 7.

7. Eighty-eight per cent of identified uses fall into five main categories: whole logs; pre-plant soil (field) fumigation; wood and wood packaging material; grain, including rice; fresh fruit and vegetables. A similar discrepancy was apparent for each year over the period 2004–2007.

8. Regulations covering the use of methyl bromide and alternatives are complex and often one regulation must be considered in the context of another. For most large volume quarantine and pre-shipment uses of methyl bromide regulations do not specify methyl bromide and a number of alternatives are available.

9. Regulations that influence the use of methyl bromide for quarantine and pre-shipment purposes fall in three main categories: export regulations where the use of methyl bromide is in response to a quarantine regulation or phytosanitary measure to control “quarantine pests” or to control pests that affect quality as a pre-shipment treatment; import regulations where the use of methyl bromide is in response to a post-entry quarantine regulation or phytosanitary measure or the detection of live insects or other pests; and plant health regulations, where methyl bromide is used for pre-plant soil treatment to support the movement of nursery stock of high plant health.

10. In reference to alternatives to methyl bromide for quarantine and pre-shipment the Task Force reported that only a small percentage of perishables traded globally were treated with methyl bromide. The Technology and Economic Assessment Panel estimated that 646 tonnes of methyl bromide were used in 2007 for perishables; about half is considered replaceable with heat, cold, the Systems Approach and other fumigants.

11. There are various alternatives for logs and wood packaging materials, including various fumigants for logs and heat, which is the preferred treatment for wood packaging materials. An alternative to wood packaging materials is to avoid any need for treatment by using, for example, plastic or cardboard pallets. Plywood and particleboard may also be used.
12. With regard to grains, in some situations slow-acting measures can be used to give pest-free status – phosphine or controlled atmosphere treatments are alternatives to methyl bromide. Where a rapid process is necessary, fumigation with sulphuryl fluoride or carbonyl sulphide are technical alternatives, matching the speed of methyl bromide. Both are more effective with longer exposures. A few countries specifically require methyl bromide for grain.
13. Concerning pre-plant fumigation of soils, a number of alternatives are as effective as methyl bromide.
14. Barriers to the adoption of alternatives include quarantine security requirements, regulatory requirements, efficacy requirements and logistics.
15. Improved practices can decrease emissions during fumigation in many situations, potentially achieving required exposures with less applied gas. There are at least three suppliers of commercial equipment and some custom-built installations. All commercial equipment relies on a capture stage on activated carbon, but subsequent treatments differ.
16. Estimates of emissions from various quarantine and pre-shipment fumigations set the upper limit to recapturable methyl bromide. The weighted average is about 79 per cent.
17. In the light of the information available, the Quarantine and Pre-Shipment Task Force has been able to make preliminary estimates of uses and of the amounts that could possibly be replaced with alternatives to methyl bromide for the main uses. There are technically viable alternatives to methyl bromide for the main categories of quarantine and pre-shipment uses.
18. There are adequate data available to inform the Parties of the quantities of methyl bromide currently being used for quarantine and pre-shipment purposes, the value of the use of methyl bromide for quarantine and pre-shipment and barriers to its replacement if the Parties should wish to bring methyl bromide emissions from quarantine and pre-shipment uses under some form of control. That might be done by adjusting the existing methyl bromide control measures of the Montreal Protocol. Eliminating the exemption for quarantine and pre-shipment uses of methyl bromide would presumably trigger Multilateral Fund financing in some form.
19. With the consequences clearly defined, Parties may wish to consider appropriate measures to accomplish recovering control of quarantine and pre-shipment methyl bromide emissions.

## **B. Presentation on the International Plant Protection Convention**

20. The International Plant Protection Convention is a treaty that aims to prevent the spread and introduction of plant pests and to promote appropriate control measures.
21. The Convention encourages best practices, recapture technologies and the use of methyl bromide alternatives where possible.
22. The methyl bromide reduction strategy includes replacing methyl bromide use, reducing emissions and accurately recording use.
23. Heat is the preferred treatment under ISPM 15 for wooden packing materials. Six other alternatives to methyl bromide for ISPM 15 are currently being evaluated.

## **C. Discussion**

24. The usefulness of information on the economic feasibility of alternatives and demonstration projects on alternatives suitable for implementation in Article 5 Parties was emphasized. The Quarantine and Pre-Shipment Task Force had identified gaps in such information to be among the gaps in information and data that currently exist in relation to quarantine and pre-shipment uses. It was also clarified that currently no funds from the Multilateral Fund were available for quarantine

and pre-shipment projects. It was mentioned that funding would be one means of facilitating progress in the identification and implementation of alternatives to methyl bromide for quarantine and pre-shipment should methyl bromide use cease to be exempted under the Montreal Protocol.

25. Concern was raised with regard to the human health effects of methyl bromide and problems related to the high global-warming potential of sulphuryl fluoride, an alternative to methyl bromide in some situations.

26. It would be possible in the future to exclude methyl bromide from the recommended treatments under ISPM 15. Indeed there were six alternatives under consideration by the International Plant Protection Convention for inclusion in ISPM 15.

27. One Party commented on its use of heat disinfestation for wood packaging and offered to disseminate the technology. Another commented on the need to retain some methyl bromide for quarantine and pre-shipment while supporting heat treatment as an alternative for wood.

28. Information was requested on use trends, per category, from 2004 and 2007. It was also suggested that not-in-kind alternatives should be included as an option for complying with ISPM 15.

### **III. Presentations by Parties: quarantine and pre-shipment situation and possible further actions and discussion on the opportunities to be considered by the Parties**

29. The key points and issues raised in the presentations by Parties and the ensuing discussion are summarized in the following paragraphs.

30. Fifteen years previously, when the first methyl bromide assessment was conducted under the auspices of the Montreal Protocol, there were few alternatives to methyl bromide for quarantine and pre-shipment and many experts believed that nothing could be done. Thanks to the Parties to the Protocol and the pest control industry, however, the world is well on its way to a phase-out that will protect the stratospheric ozone layer.

31. Quarantine and pre-shipment is important to agricultural productivity, the protection of property and the protection of the natural ecosystem. Criteria for substances to be used for quarantine and pre-shipment include reliability, economy, environmental acceptability and occupational safety.

32. Strategies for reducing and eliminating methyl bromide use and emissions include regulation, economic incentives (taxes on methyl bromide, subsidized research and development, seed money for demonstrations) and product labelling to allow consumers to avoid products containing methyl bromide.

33. Collaboration between the Montreal Protocol and the International Plant Protection Convention and collaboration between environment and agriculture ministries at the national level is critical to the final phase-out of methyl bromide and can be the occasion for a meeting-of-the-minds between treaty organizations.

34. Leadership is demonstrated in quarantine and pre-shipment phase-out, including the impressive success of the European Community and the action of European Union member States in eliminating regional requirements for the use of methyl bromide and working to eliminate requirements for the use of methyl bromide on imported products.

35. Many new technologies are being commercialized, including new chemical fumigants, mixtures of new and existing pesticides, sequential application of pest control measures and combinations of chemical pesticides and heat. Heat treatment alone is a promising alternative to methyl bromide that avoids most of the environmental and occupational risks inherent in chemical pesticides.

36. Recapture through recycling or destruction is increasingly cost-effective and is now practised in a wide range of countries. Countries, including Mauritius, are proposing an integrated quarantine facility that would minimize the use of methyl bromide and provide cheaper and more reliable fumigation.

37. Presenters and participants said that there was an opportunity for organizations and processes such as the Technology and Economic Assessment Panel and the OzonAction programme to document, validate and disseminate information on the best alternatives to methyl bromide.

38. It was said that progress in alternatives and substitutes to methyl bromide for quarantine and pre-shipment were reaching the stage where Parties might wish to consider a transition from a categorical exemption to a case-by-case authorization of methyl bromide use for quarantine and pre-shipment, which would be analogous to the treatment of process agent applications. Such an approach would minimize the use and emissions of methyl bromide and would spotlight any remaining uses for research and development necessary for the final phase-out of methyl bromide.

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