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REVISION OF THE GUIDELINES FOR THE METHYL BROMIDE SECTOR

This document consists of:

Part I: Report of the Working Group (Pending)

Part II: Report of the meeting of Experts on methyl bromide alternative technologies

Part II
Report of the Meeting of Experts on Methyl Bromide Alternative Technologies

Introduction

1. In March 1998, the Executive Committee of the Multilateral Fund adopted the strategy and guidelines for investment projects in the methyl bromide (MB) sector on the basis that they would be reviewed after a period of fifteen-months (i.e., June 1999).

2. Thus, in March 1999 the Committee set up a Working Group composed of representatives from Algeria, Brazil, Canada, China, Italy and the United States of America, to revise the existing guidelines for projects in the MB sector. To facilitate the deliberations of the working group, the Committee requested the Secretariat to prepare a document incorporating information provided by experts in the field including members of the Methyl Bromide Technical Options Committee (MBTOC), as well as findings from demonstration projects under implementation by the Implementing Agencies (decision 27/86).

3. In accordance with the mandate given by the Committee, the Fund Secretariat convened a meeting of Experts on June 9-10, including the Co-Chairs of MBTOC. The meeting was also attended by representatives of the implementing agencies. The objectives of the meeting were to:

(a) review the results of demonstration projects funded by the Multilateral Fund, specifically technologies and practices for the phase out of MB in soil, storage and structure applications;

(b) advise on alternative applications for which readily transferable technologies exist;

(c) identify categories of incremental costs related to the phase out of the use of MB; and

(d) discuss policy, legislative framework and other requirements that should be put in place at the national level in order to ensure the sustainability of the implementation of MB phase out projects (users do not revert to methyl bromide after phase out).

4. This paper presents the conclusions of the meeting of Experts on the above objectives.

MB consumption data in Article 5 Parties

5. The first control measure applicable to Article 5 countries is a freeze on MB consumption in 2002 at the average of the 1995-1998 levels (the “baseline” for compliance), to be followed by a 20 per cent reduction in baseline consumption in 2005. Data pertaining to baseline determination will be reported to the Ozone Secretariat and should be known by the end of 1999.

6. MB consumption data in Article 5 countries vary widely according to the source of information used:

(a) The "1998 MBTOC Assessment of Alternatives of Methyl Bromide" reported that MB consumption increased from 8,706 ODP tonnes in 1992 to 9,210 (or 10,400) ODP tonnes in 1996 (depending on the source of information used[1]);

(b) Data reported by Article 5 countries to the Ozone Secretariat indicated a consumption of 7,180 ODP tonnes in 1996[2] and 8,488 ODP tonnes in 1997[3];

(c) Data reported in 42 demonstration project proposals that have been submitted for consideration by the Executive Committee indicate a consumption of 8,200 ODP tonnes;

(d) The 1999 TEAP Assessment of the Funding Requirements for the Replenishment of the Multilateral Fund for the Period 2000-2002 reported a consumption of 7,651 ODP tonnes in 1996;

(e) A progress report on the implementation of MB demonstration projects presented by the representative from UNIDO at the meeting of Experts, indicated an overall consumption in 50 Article 5 countries of 6,480 ODP tonnes of MB for soil fumigation in addition to 720 ODP tonnes for fumigation of commodities in 1998.

7. Accurate data on consumption of MB is necessary to: (i) calculate the baseline (average consumption over the period 1995-1998), (ii) assess the ability of Article 5 Parties to meet their obligations under the Protocol (the 2002 freeze and the 20 per cent reduction by 2005 based on the baseline), and (iii) determine the technical and financial requirements to meet those obligations.

8. Thus, the meeting of Experts acknowledging the difficulties associated with data collection in this sector, recommended comparison of consumption data from several sources of information including: import data collected from customs department and importers; data gathered by the Ministry of Agriculture (pesticide regulatory body); data reported to the Fund and Ozone Secretariats; data reported in implementing agencies surveys; data from MBTOC; and estimation on quantities used based on total area fumigated for a particular crop at an average MB application rate.

Uses of MB by type of crop/application

9. UNIDO's report to the meeting indicated that more than 80 per cent of the total non quarantine and pre-shipment consumption of MB is for fumigation of four crops: tomatoes (2,810 ODP tonnes), tobacco (1,370 ODP tonnes), cut flowers (865 ODP tonnes) and melons (790 ODP tonnes). The remaining consumption (650 ODP tonnes) is for fumigation of strawberries and other horticultural crops. In addition, 720 ODP tonnes are used for fumigation of commodities (excluding quarantine and pre-shipment applications).

[1] Data used in the MBTOC Assessment were based on the following sources of information: data reported to the Ozone Secretariat, 1998 MBTOC survey, UNEP/IE 1998 survey, UNDP 1995 and 1997 surveys, Multilateral Fund project documents, interviews and discussions with National Ozone Officers and MBTOC members.
[2] UNEP/OzL.Pro.10/3.
[3] UNEP/OzL.Pro.11/ImpCom22/3.

10. The likely beneficiaries of investment projects in soil fumigation could range from a large number of small independent farmers to well structured, export-driven crops organized in Associations, like the tobacco industry. Some of these companies could be transnational.

11. In general, fumigation of commodities and structures is performed by specialized service companies, several of them belonging to transnational corporations. These companies are considered to be well-organized and thus easy to reach. However, in some cases, MB is directly applied by the personnel working for the facility to be treated (e.g., silos, mills, warehouses). Thus, the target group for MB investment projects in this category could include owners of facilities and providers of fumigation services.

Preliminary results from demonstration projects

12. To date, the Executive Committee has allocated resources for the preparation of 53 projects in 48 Article 5 countries of which 40 demonstration projects for soil fumigation and storage (commodities) and structural fumigation, and two investment projects were approved: one for phasing out MB in tobacco seedbeds and another for storage of peanuts. In addition, the Committee also approved related supporting activities of global coverage.

13. The demonstration projects under implementation on soil fumigation cover 12 different crops, five of which have world-wide distribution, including, tomatoes, tobacco, curcubits, flowers and strawberries. In total, 13 different alternative technologies are currently under demonstration, all of them in combination with IPM systems. However, only five of the total 13 alternatives have been proposed in more than 10 applications: low-dose chemicals (as part of an IPM programme), soil solarization, non-soil cultivation, steam pasteurization and bio-fumigation.

14. The demonstration projects in storage applications covered eight different commodities and structures and 11 alternative fumigation processes, including integrated commodity management (ICM). However, only four technologies (phosphine alone; phosphine in combination with heat and carbon dioxide; and diatomaceous earth) are the most commonly chosen.

Categories of incremental costs for the phase out of methyl bromide

15. The Multilateral Fund covers the agreed incremental costs required for the phase out of the consumption and/or the production of substances controlled under the Montreal Protocol. While the Fund has information on incremental costs for industrial related activities through the implementation of projects in sectors such as aerosols, refrigeration and foams, the estimation of incremental costs in MB projects has always been problematic. This is mainly due to the very limited field-level experience for MB projects.

16. In any event, the incrementality of the costs arises from a comparison of the costs of applying the most cost effective, environmentally compatible and economically viable proven substitute technology with an existing baseline. The baseline, in this case, would include cost of MB and the technological set-up and infrastructure available for its application, which could be assessed.

Available alternative technologies

17. As of today, there is not a single chemical substitute that can replace all the uses of MB either for soil disinfestation or commodities and structure fumigation. However, several proven technologies are commercially available which can be adapted to local conditions in Article 5 countries. Some alternatives will clearly not be suitable in some regions (e.g., solarization with limited sun radiation), but where these alternatives become marginal is not always evident.

18. Among the technologies currently available, the following five have emerged as the most practical and relatively universal technologies for soil treatment: floating tray systems (for tobacco, tomatoes and other seedlings); hydroponics (cut flowers and greenhouse vegetables); steam pasteurization (mainly for cut flowers in greenhouses), bio-fumigation; and low-dose chemicals. All of these alternatives can be integrated into an IPM programme for control of soil borne pests and diseases, as part of the process of adapting them to local conditions.

19. These technologies have also been proven to be efficacious for controlling soil-related pests and diseases in the priority crops where MB is currently used in Article 5 countries.

20. The most prominent alternative technologies for commodities and structure fumigation identified by the meeting of Experts are: heat treatment (particularly where a source of heat already exists in the facility to be treated); phosphine alone (pellets, tablets, liquid or gas forms) or phosphine (40-60 ppm) in combination with carbon dioxide (3–5 per cent) and heat (30–40^{o}C) to reduce the application rate; sulphuryl fluoride (mainly for wood and wood products); and in general good pest management practices, through prevention, monitoring, surveillance and control.

21. The meeting of Experts strongly recommended that the selection of alternative(s) technology(ies) should be decided by the country concerned and should involve, among others, government agencies, farmers and farmers' associations, exporters, research institutions and universities and NGOs. A resource person responsible for implementation of the technology should be chosen from local experts. In addition, a sector-based approach for MB projects may be the most efficient way of eliminating MB.

Definition of categories of incremental costs

22. The meeting of Experts recognized that, as distinct from the phase out of other ozone-depleting substances, projects for the phase out of MB are unique in terms of determining the incremental costs because of the following special features:

(a) MB is a very potent fumigant, that can control a wide range of pests, diseases and weed seeds. As of today, there is no single cost-effective alternative capable for replacing it in all applications. The effectiveness of any alternative technologies can be enhanced when applied within the existing integrated soil pest management (IPM);

(b) Adoption of new technologies in agricultural-related activities involves changes on traditional practices and attitudes, and covers a large number of end-users

(farmers). Thus, implementation of phase out of MB may be time-consuming, depending on the region, infrastructure, the pest, crop and alternative proposed.

(c) Risk associated with implementation of alternative technologies and indeed, farming itself, is inherently higher than in industrial processes due to climatic and pest/crop variability and needs to be carefully assessed and managed, taking into account that the target group are individual farmers who are legitimately risk-averse.

(d) Unlike other sectors where it may be sufficient to only change the manufacturing equipment to ensure phase out on a one off basis, phase out of MB must take place every crop cycle. The possibility of backtracking, reverting to MB, must be addressed.

(e) The rather uniqueness use pattern of MB as compared to all ODS industrial applications.

23. Therefore, it was recognized that the cost of phase out MB could not be calculated on the basis of the established criteria used for the costs of assessing conversion projects in other sectors. Thus, the meeting of Experts identified the following to represent categories of incremental costs for MB investment projects:

(a) The transfer of skill, knowledge (including the know-how) on the proposed alternative technology is the most important component of any MB investment project. Integration of the proposed technology within an overall pest management system usually requires training to all stakeholders involved in the process (farmers, contractors, importers, associations, agricultural extensionists, government officials and even purchasers of crops), and depends mainly on the alternative proposed and the national agricultural infrastructure.

(b) In general, few items of equipment and/or farm input materials might be needed for implementation of some alternative technologies to MB. For example, micro-tunnels or low-cost greenhouses (with a simple framework covered with plastic sheets) with plastic trays for the seedlings are the basic project components for the floating tray system. Plastic sheets are needed for soil solarization practices, where the plastic remains in the soil for several weeks. Steam generators are sometimes used for soil pasteurization in greenhouses for cut flowers and some greenhouse vegetable. Phosphine generators, a heat source and a source of carbon dioxide might be required in the fumigation of commodities and structures. While the unitary cost of equipment/farm input materials is generally low, the total cost could be high when the large number of potential end-users is considered, particularly in soil treatment.

(c) Depending on the technology chosen, incremental costs may include operating costs or may result in operating savings. Operating costs would be associated with increase in energy consumption (steam and heat generation), chemicals, other raw materials and seeds. Operating savings would result from reduced labour and land

use, elimination of MB and/or lower amounts of chemicals. However, up-front resources might be needed at the initial stages of implementation of a new technology.

(d) In all cases, the so called farm input materials (e.g., plastic sheets for micro-tunnels, greenhouses and for covering the soil, or plastic trays) can be considered as part of the operating costs since these materials can only be used for a limited period of time. Moreover, the meeting of Experts recognized that these materials should be funded, on limited amounts, as “training materials”. The farmers would use these materials to gain first hand experience in applying the alternative technology in a limited area without the need to spend their own financial resources.

(e) In certain circumstances, alternative technologies will require longer period of time to be effective compared with MB; this may result in longer downtime and thus cost. The Executive Committee may wish to consider if downtime costs could be regarded as incremental costs.

Government commitment, policy measures and other requirements

24. The meeting of Experts recognized that national policy control has to be in place to enable countries to meet their obligations under the Montreal Protocol on a timely basis. However, in many countries this important issue is difficult to approach. It was recognized that appropriate policies have to be in place in order for the countries to meet their control schedule obligations under the Montreal Protocol on time.

25. As a result of the discussions, it was proposed that a policy framework should be established to encourage and link adaptation of legislation (including labelling of commodities produced without MB, taxes and levies to import of MB) with the implementation of projects. Monitoring and verification of the achievements of project milestones through objectively verifiable indicators in connection with fund disbursement are credible tools for enforcement.