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Final report of the Technology and Economic Assessment Panel Quarantine and Pre-Shipment Task Force: executive summary

Note by the Secretariat

1. The annex to the present note sets out the executive summary of a report by the Technology and Economic Assessment Panel entitled: "Quarantine and Pre-Shipment Task Force – Final Report October 2009". The full report is available on the Ozone Secretariat website.[1]

2. The executive summary is being issued in the six official languages of the United Nations to facilitate its consideration by participants in the Twenty-First Meeting of the Parties and the workshop on methyl bromide use for quarantine and pre-shipment purposes. It is presented as received and has not been formally edited.

1 http://ozone.unep.org/Assessment_Panels/TEAP/Reports/TEAP_Reports/teap-qpstf-october2009.pdf.

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Annex

Executive summary

1. Decision XX/6 requested TEAP to review all relevant, currently available information on the use of methyl bromide for QPS applications and related emissions; to assess trends in the major uses, available alternatives, other mitigation options and barriers to the adoption of alternatives; and to determine any additional information or action that may be required to meet those objectives.

2. TEAP set up a revitalised Quarantine and Preshipment Task Force (QPSTF) made up of 10 experts, 4 from A5 and 6 from non A5 countries, to respond to aspects of Decision XX/6 directed to TEAP.

3. Between 1999 and 2007 reported production of MB for QPS remained approximately constant on an annual basis and roughly at the same level as reported consumption. Cumulative total reported production and consumption between 2002 and 2007 was 69,265 and 69,882 tonnes respectively, but fluctuations exceeded 1,000 tonnes on a yearly basis, possibly reflecting stock changes.

4. Reported global consumption for QPS has averaged nearly 11,000 metric tonnes a year since 1995, with some variation from year to year, with minimum consumption of less than 8000 tonnes in 1998, with peaks in 1999, 2003 and 2006 at 12,425, 12,286 and 12,207 tonnes respectively.

5. Non-A5 Parties accounted for approximately 62% and 46% of reported global consumption in 2006 and 2007, respectively. Six non-A5 Parties reported consumption of >100 tonnes QPS methyl bromide in 2007, with two Parties accounting for 82% of total non-A5 consumption. USA reports a wide annual variation in QPS consumption, peaking at 5,089 metric tonnes for 2006 and reduced to 2,930 tonnes in 2007. QPS consumption in A5 countries has increased since 2000, particularly in the Asian region, while in non-A5 countries it has declined. In 2007, eleven A5 countries reported consumption at or above 100 metric tonnes for QPS purposes. Together, this accounted for 5,100 tonnes or about 87% of total A5 consumption in that year. A5 consumption amounted to 38% of total global consumption in 2006 and 54% in 2007.

6. For the 2007 estimated QPS usage of 8,486 tonnes, QPSTF estimated that 65% of this related to phytosanitary (Quarantine) requirements associated with international trade, covered by the IPPC; 14% for Preshipment uses; 20% for within-country Quarantine uses, including treatment for producing propagation materials; and <1% for other Quarantine uses, particularly control of human health and animal disease vectors, internationally or domestically.

7. Most QPS treatments, by volume, for international trade are carried out at point of export to meet requirements of the importing country.

8. While there remain some data gaps and uncertainties, information supplied by the Parties has allowed QPSTF to make estimates of use for more than 83% of total reported QPS consumption. Five major categories of use accounted for 70% of total global 2007 consumption. These main categories represent about 84 % of the uses for which detailed information is available (i.e. excluding unidentified uses). These are for fumigation against plant pests of: fresh fruit and vegetables (8% of identified uses); grain, including rice (12%); soil for preplant fumigation in situ (14%); whole logs (21%); and wood and wood packaging material (15%). Over all categories of QPS fumigation it is estimated that around 79% of applied methyl bromide is emitted, in absence of recapture and destruction processes and with standard industrial practice.

9. There is a discrepancy of about 1,300 tonnes for non-A5 Parties for 2007 between total consumption as represented by methyl bromide actually used, estimated by ‘bottom-up’ analysis, and total consumption reported as per Article 7 data. A discrepancy of similar magnitude is apparent yearly over the period 2003-2007. This discrepancy results mainly from differences between reported QPS methyl bromide consumption by the US under Article 7 and estimates of its annual actual use as a fumigant. At this time the fate of this surplus is unidentified, but could include accumulation of QPS-labelled stocks of methyl bromide.

10. The proportions treated with QPS methyl bromide represent a small fraction of these commodity groups traded internationally, though a high proportion or all of the trade in these groups between particular countries may be treated at present and be important economically.

11. In response to Decision XX/6(7) that called for TEAP list categories of use it has identified that have been classified as QPS use by some Parties but not by others, the following large volume methyl bromide fumigation treatments were identified: a) export coffee (Vietnam); b) export rice and cassava chips (Thailand, Vietnam); and c) soil for production of high health propagation material (USA). The Parties have provided rationale as to why these situations quality to be treated as QPS uses, given as annexes to this report. Target pests for QPS treatments vary from country to country and with the particular trade or situation. The target pests for Quarantine and for Preshipment are distinct.

12. The NPPOs of importing countries maintain extensive lists of regulated (Quarantine) pests, specific to the requirements of that country. Some of these pests are specifically targeted by methyl bromide fumigation at this time in particular countries and with origin of the cargo and risk that it might carry Quarantine pests taken into account.

13. While there may be very many different pest species of Quarantine significance for particular trades, there are some key pests that are at present commonly managed with methyl bromide fumigation. These include pinewood nematode, longicorn beetles and other wood pests for trade in logs and wooden materials, khapra beetle in grain and similar commodities, tephritid fruit flies in some fresh fruit and various pathogenic nematodes and fungi in soils.

14. Development of methyl bromide alternatives for Quarantine applications on commodities continues to be a difficult process, exacerbated by the multitude of commodities being treated, the diverse situations where treatments are applied, a constantly changing trade and regulatory landscape, requirements for bilateral agreement on QPS measures, requirement for very high levels of proven effectiveness, often for several different target species, lack of patent coverage or other commercial protection for some potential alternatives, and the low price and plentiful supply of methyl bromide for QPS purposes. Regulations favouring methyl bromide treatment or prescribing methyl bromide alone are a major barrier to adoption of alternatives as often there is little incentive for the regulation to be changed. A key barrier to development of alternatives for soil treatment for growing plants of certified high health status is the rigorous testing required to prove and certify an alternative effective.

15. With regard to Quarantine treatments associated with international trade, the IPPC has an agreed policy that alternatives to methyl bromide should be used wherever technically and economically feasible, advice mirroring that in Decision VII/5(c). Under the IPPC, there is a Technical Panel on Phytosanitary Treatments that has promulgated a standard for treatments to be assessed against and is assessing alternatives and approving where sufficient data is available.

16. There are technically effective alternatives in use approved and in use for at least some of the major categories of current Quarantine uses on commodities. Heat treatments are available for treatment of sawn timber and wood packing material, fumigation with phosphine or sulfuryl fluoride – MITC are available for particular trades with whole logs, and there are a number of alternative options in use for various perishables in international trade.

17. For Preshipment treatments, the objective of treatments is to produce goods that are ‘pest-free’, to some standard level. While in practice the target species are typically cosmopolitan insect pests (beetles, moths and psocids) associated with quality losses in storage, treatments are also expected to eliminate the other living insect species that may contaminate commodities, even when they do not pose a direct threat to the quality of the commodity.

18. For Preshipment treatment of grains, there are several alternative fumigants, which are available or near market, that can match the effectiveness and speed of action of methyl bromide. Where logistically possible, several alternative strategies are available that can deliver ‘pest-free’ grain at point of export. In-transit fumigation with phosphine may also be an option. Several soil treatment techniques and soilless systems can deliver propagation material produced to high plant health status.

19. In many of these cases, where the alternatives are not already approved and agreed, there are various regulatory and other barriers to be overcome, before the alternatives can be applied.

20. The QPSTF identified a number of instances of QPS methyl bromide treatments where there are no technically effective alternatives at this time. Examples include: treatment of some export fruit that are hosts of codling moth, postentry treatment of a number of import consignments, e.g. cut flower imports, at risk of infestation with Quarantine pests, treatment of grains and associated materials against risk of presence of khapra beetle, some export trades in undebarked, whole logs, and treatment of wood packaging material where heat treatment is not feasible.

21. Methyl bromide emissions from fumigations can be minimised through adoption of best practice, both directly through best use of the fumigant and indirectly by minimising the need to retreat after treatment failures. Methyl bromide can also be conserved to some extent. In a commercial installation in China treating logs, residual gas from one fumigation chamber is transferred to a new fumigation. The concentration is then topped up to specification using new methyl bromide, with a saving of methyl bromide of about 30% use.

22. There are several commercially available processes for recapture of residual methyl bromide. Present installations known to QPSTF have individual capacities of less than 50kg of fumigant, but higher capacity units are being currently being installed. All commercially available recapture units are based on absorption onto active carbon, but subsequent treatment of the loaded carbon differs. Efficiencies of recapture are strongly dependent on good fumigation practice that minimises leakage during the exposure to the fumigant. Some specifications for QPS fumigations include a minimum residual concentration or % retention at the end of the exposure. Examples vary from 21 to 60% retention, setting a limit on easily available fumigant for recapture. Taking into account losses in practice during fumigations, including sorption losses and leakage, it is estimated that 30-70% of initial dosage is available for recapture, with good practice, depending the load treated and other conditions. Commercially available recapture system also offers the ability to release recaptured methyl bromide for reuse, with a saving in practice of about 30% of methyl bromide use. Costs of recapture are highly situation-dependent, but may typically add 50-100% to the cost of fumigation.

23. Methyl bromide, as a highly toxic gas, is subject to numerous restrictions and regulations that affect its use as QPS fumigant treatment.

24. Some Parties have discontinued use of QPS methyl bromide or have announced they intend to do so in the near future. The Russian Federation discontinued use of QPS methyl bromide with legislation that also terminated use of non-QPS material. Both the EC and Brazil have signalled they will discontinue QPS methyl bromide use soon.

25. Industrial and environmental regulations relating to methyl bromide fumigations vary widely between countries. In some, its use severely restricted and may require recapture in some regions. National phytosanitary regulations specify set dosages for particular applications. There are relatively few cases (by total volume used) where methyl bromide is the sole treatment specified, though local circumstances may make it the only feasible option. This is particularly so for postentry quarantine.

26. Illustrative examples of regulations affecting methyl bromide as a QPS fumigant are given in the report.

27. In general, there is sufficient data available to provide a reliable picture of major uses of QPS methyl bromide and the many regulations that encourage or restrict QPS methyl bromide use are accessible, if not fully catalogued. Alternatives for many of the uses are known, though often not tested and certified to a level acceptable to regulatory authorities.

28. In the light of the information available on categories of use of methyl bromide for QPS purposes, alternatives available and key pests, the QPSTF was able to make preliminary estimates of uses and amounts that could possibly be replaced with alternatives. Most, perhaps 80%, of QPS methyl bromide in the world is technically replaceable according to the scenario presented, although achieving this level of replacement is constrained by many difficulties, including resolution of some regulatory constraints on the available and potential alternatives.