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Item 5 of the provisional agenda

WORKSHOP ON CONTROL OPTIONS/TECHNOLOGIES TO ABATE HEAVY METALS (HMs) AND PERSISTENT ORGANIC POLLUTANT (POP) EMISSIONS FROM STATIONARY SOURCES AND PRODUCTS

Prepared by the organizing committee with the collaboration of the secretariat

Introduction

1. In accordance with the work-plan for the implementation of the Convention (ECE/EB.AIR/68, Annex VI, item 4.1) and at the invitation of the Government of the Czech Republic, a workshop on control options/technologies to abate heavy metals and persistent organic pollutant emissions from stationary sources and products took place in Prague on 26-28 April 2000.

2. More than 40 experts, representing governmental agencies, research institutes, industry and NGOs, from 18 Parties to the Convention participated. Representatives of the United Nations Environment Programme (UNEP Chemicals) and UN/ECE also attended.

3. Messr. J. Hlavacek, Deputy Minister, and A. Jagusiewicz addressed the workshop's participants on behalf of the host country and UN/ECE respectively.

4. The aim of the workshop was to review the approaches taken by Parties for the control of emissions of heavy metals (HMs) and persistent organic pollutants (POPs) from stationary sources and products and to identify on that basis applied control options and technologies, including related economic aspects, e.g. investment and operating cost. The workshop also served as a forum to exchange information on technology use and operating experience between different countries of the UN/ECE region.

5. The six working sessions of the workshop were devoted to (see detailed programme attached):

- Policy, legislation and regulations;
- Control options/techniques and their costs and product management;
- Product and by-product management and HM and POP emissions;
- POP emissions and inventories;
- Sources, inventories and measurements; and
- Socio-economic aspects and consequences.

6. During the concluding session, chaired by Mr. A. Jagusiewicz, the workshop, on the basis of proposals from the sessions' chairmen and rapporteurs, drew a number of conclusions and draft recommendations. These are set out below.

Conclusions

7. On the basis of presentations from representatives of a small number of Parties, there would appear to be a trend towards legislation based on best available techniques (BAT).

8. Dispersive applications of lead have declined to very low levels and now represent less than 2% of annual lead use. The major remaining dispersive applications are lead additives in petrol and lead shot for hunting and fishing.

9. A wide range of measures exist to control emissions from metal-containing products. These include labelling, concentration limits, extraction limits, recycling, economic instruments and voluntary agreements.

10. HM emissions from waste incineration can now be effectively reduced.

11. For the control of emissions of lead, the avoidance of dispersive applications, the application of emission standards and in some cases the prohibition of specific uses are measures to be targeted.

12. Lead emissions from point sources in modern processing plant may be significantly lower than diffuse emissions from operations inside the plant like transport, handling and storage of lead.

13. Techniques are available to control dioxin/furan (PCDD/PCDF) emissions from waste incineration plant and from chemical plant (PVC) to reduce these substances below a toxic equivalent (TEQ) value of 0.1 ng/m^3 (11% O_2).

14. For other sectors (e. g. metallurgical industries), control techniques are also available to reduce PCDD/PCDF emissions significantly.

15. In the past two decades the application of the mercury management programme has led to a reduction of about 90% in mercury emissions in western Europe's chlor-alkali plant.

16. For chlor-alkali plant using the mercury cell process, the industry has developed recommendations, techniques and standards based on experiences and best practices to control and reduce the emissions of mercury. However, replacing the mercury cell technology resulting in zero Hg emissions is the best option.

17. When existing mercury-based chlor-alkali plants are closed, a significant amount of mercury emanating from the decommissioning has to be taken care of in an environmentally sound manner.

18. A methodology for risk assessment of the exposure of living organisms to mercury emitted by chlor-alkali plant has been developed by Eurochlor. (Although not discussed at the Workshop, according to Eurochlor it can be used to assess such risks from any chlor-alkali plant using the mercury cell technology).

19. Fly ash from waste incinerators contains toxic organic substances. Stabilization of this material is not a long-term solution.

20. The workshop presented good examples of lead recycling. Most chemical production of lead comes from the recycling of used lead (secondary lead). A similar approach will be available for cadmium.

21. Recycling of lead, cadmium and mercury is preferred to disposal.

22. Primary measures prove to be efficient for reducing HM and POP emissions. In combustion processes this is achieved by fuel preparation and optimized furnace design.

23. Life-cycle considerations are a helpful tool to estimate emissions of cadmium (and lead) from different phases during the production, use and disposal of goods/products.

24. The measurement methods, the determination of emission factors and the methods for establishing emission inventories are often not harmonized. This leads to a lack of transparency and comparability of the reported results.

25. According to Eurochlor, chemical processes where PCDD/PCDF can be found have either been stopped (e.g. PCBs) or adequate best available techniques (BAT) are installed to control and minimize emissions into the environment (e.g. production of ethylene dichloride).

26. The chemical industry in western Europe, including the chlorine industry, does not release significant emissions of dioxin-related compounds in the environment.

27. According to the study presented at the workshop, there is no relation between the chlorine content in waste (e.g. PVC) and the PCDD/PCDF amounts formed in waste incinerators. The key determining factors are the design and operating conditions (in particular temperature) of the incinerators. However, further case studies may be needed to draw more general conclusions.

28. Collecting measurements and reliable data from a range of diverse sources, to prepare inventories of HMs and POPs, provides the basis for scientific analysis and the derivation of appropriate risk management measures.

29. Economic instruments can be effective solutions if implemented in a proper institutional, economic and social framework.

30. Applying BAT to protect the environment is a new way of applying traditional economic instruments, which is now linked to administrative measures.

Draft recommendations

31. More information should be exchanged, both between Parties to the Convention, and nationally, especially between industry. Therefore, the exchange of information on control options /techniques and their practical experience should continue in the future under the Convention. Periodic events similar to the workshop in Prague should be organized, e.g. every two years.

32. More information is required from more Signatories to the Protocols on HMs and POPs to confirm the tendency to base legislation and regulations on BAT and other control measures as included in the annexes to the two Protocols. A new annotated outline for reporting on strategies and policies should be explored to maximize the collecting of such information by the secretariat from all the Signatories.

33. Reported data related to the abatement of HM and POP emissions should be harmonized starting with the required reporting under the Protocols on HMs and POPs (Atmospheric emission inventory guidebook, Annotated outline on strategies and policies). However, this process should also be initiated between different international instruments on HMs and POPs, e.g. the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) and the European Union's work on Integrated Pollution Prevention and Control (IPPC) (BAT Reference Document). A common reporting format will ease the workload of Parties/Signatories to these instruments and improve the comparability of data.

34. Research and development work on diffuse emissions of HMs and POPs from industrial sources, small firing installations and traffic and on available control options/techniques should be

promoted and its results widely disseminated among Parties/Signatories to the 1998 Aarhus Protocols.

35. In general, HMs should be recycled as far as technically and economically possible and environmentally sound.

36. Activated carbon systems and selective catalytic reduction (SCR) simultaneously cut not only POP emissions but also those of other pollutants, like HMs or NO_x. The calculation of costs for the control systems should consider this advantage.

37. The use of life-cycle considerations for emission estimates is recommended.

38. Industries should be encouraged to initiate voluntary programmes in combination with other actions to minimize HM and POP emissions, e.g. Accelerated Reduction/Elimination of Toxics (ARET) or its successor programmes in Canada.

39. The inclusion of the chemical analysis of HMs (and POPs) into regular national monitoring programmes should be encouraged.

40. Analytical techniques for HMs should be improved in order to increase the accuracy of data to generate comparable results. In particular, Parties should be encouraged to follow the IPPC work on the BAT Reference Document to address data comparability.

41. The Parties should be encouraged to follow available standards set by the International Orgnization for Standardization (ISO) and or the European Committee for Standardization (CES) or other validated methods for the generation of analytical results.

42. Emission inventories of HMs and POPs should follow agreed guidelines in order to improve transparency, accuracy, reliability, completeness and comparability of the data produced. The joint EMEP/CORINAIR Atmospheric Emission Inventory Guidebook should be regularly updated in order to support this process.

43. Risk assessment and risk management options together with the application of the precautionary principle with respect to products and their disposal, e.g. decommissioning of mercury cells, are important and should be proposed as topics for future workshops on the control of HM and POP emissions.

44. The workshop's participants invited the host country to prepare the proceedings by September 2000 and requested all authors to submit their presentations in electronic form to the workshop's secretariat by June 2000. Timely preparation of the proceedings would also allow the Task Force on By-products/Residues containing HMs or POPs to make use of the relevant presentations before its last meeting scheduled for October 2000.

45. Non-industrial sources of HMs and POPs should be given greater priority by the competent authorities and appropriate measures to abate domestically generated pollutants should be considered.

46. Biological monitoring of human exposure should be an integral part of the complex approach to the evaluation of the present situation and determining future trends.

47. Sound economic evaluation should be applied to the new forms of emission reduction.

48. The socio-economic impact of abatement measures should be considered when preparing national and international environmental legislation.

49. Abatement technology should be made readily available to those countries and industries that require assistance in applying environmental protection measures.