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NEGOTIATION OF A REVISED OR NEW PROTOCOL ON PERSISTENT ORGANIC POLLUTANTS

Report by the Co-Chair of the Task Force on Persistent Organic Pollutants

1. This report presents the results of the sixth meeting of the Task Force on Persistent Organic Pollutants (POPs), held in Vienna from 4 to 6 June 2007, in accordance with item 1.4 of the 2007 workplan (ECE/EB.AIR/2006/11) adopted by the Executive Body at its twenty-fourth session (ECE/EB.AIR/89).

2. Experts from Austria, Canada, the Czech Republic, Estonia, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Poland, Sweden, the United Kingdom of Great Britain and Northen Ireland, the United States of America and the European Community (EC) participated in the meeting. Representatives from the EMEP[1] Meteorological Synthesizing

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[1] The Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe.

Centre-East (MSC-E) attended. Representatives from Beveride and Diamond (counsel to semiconductor industry associations), Bromine Science and Environment Forum (BSEF), Dover Chemical Corporation, EuroChlor, the European Semiconductor Industry Association and the World Chlorine Council also attended the meeting. Gdansk and Lancaster Universities as well as the Dutch and the German consulting companies SenterNovem and BiPRO were represented. A member of the UNECE secretariat was present.

3. Mr. J. Sliggers (Netherlands) chaired the meeting.

4. Mr. Helmut Hojesky, Head of the Department, Austrian Ministry of the environment opened the meeting and welcomed the participants.

I. MANDATE OF THE TASK FORE AND OBJECTIVES OF THE MEETING

5. In line with its workplan, Task Force:

(a) Continued exploration of management options for the substances accepted as POPs by the Parties to the Protocol at the twenty-third session of the Executive Body, Pentabromodiphenyl ether (Penta-BDE) and perfluorooctane sulfonates (PFOS), as well as for the substances accepted as POPs at the twenty-fourth session of the Executive Body: hexachlorobutadiene (HCBD), octabromodiphenyl ether (OctaBDE), polychlorinated naphthalenes (PCN), pentachlorobenzene (PeCB) and short-chained chlorinated paraffins (SCCP) (see section II below);

(b) Updated the generic guidelines for the technical review of dossiers of new substances that may be proposed by Parties for inclusion in annexes I, II and III to the Protocol (section III below);

(c) Agreed proposals for its workplan for 2008 (section V below).

II. EXPLORATION OF MANAGEMENT OPTIONS FOR SCCP, PECB, HCBD, PCN, OCTA-BDE PENTABDE AND PFOS

6. As agreed at its fifth meeting (Tallinn, 29 May–1 June 2006), the Task Force had prepared and circulated a questionnaire to Parties' experts and to stakeholders, including industry, to gather further information on management strategies and reduction options for PentaBDE, PFOS and other substances listed in paragraph 5(a) above in Europe and North America. To the 61 questionnaires it sent out, the Task Force had received 19 responses. The questionnaire and the answers received were made available on the website of the Task Force. The further information received was used to compile documents on management options for the seven substances. Due to the relatively short time between the preparation of the dossiers on new substances and the questionnaire survey (two to four years), not much new information had become available.

7. The Task Force considered that it was relevant for all the seven substances to assess the effectiveness of measures once a substance was listed in the annexes to the Protocol. If a substance was listed in annex III, Parties would be obliged to monitor and report emissions in addition to the other obligations in article 3 of the Protocol on POPs to reduce total annual emissions from a baseline reference year. It would also be possible to request the Working Group on Effects and the EMEP Steering Body to track the effectiveness by monitoring levels in the environment. The choice for having emission inventories and/or monitoring would have cost implications.

8. Of the seven substances, PCN, PeCB and HCBD could be candidates for listing in annex III. All substances might be appropriate for consideration for environmental monitoring.

9. For substances that were no longer produced or used, the benefit of listing the substance might not justify the related costs. PCN, PeCB and HCBD could also be candidates for not listing. This would not prevent future production and use of these substances.

A. Perfluorooctane sulfonates (PFOS)

10. The Task Force noted that information in the report of the Task Force to the Working Group on Strategies and Review presented at its thirty-eight session, (ECE/EB.AIR/WG.5/2006/10) remained unchanged as regards the sections that define and characterize PFOS as well as those on their production, use and emissions (paragraphs 82-90). PFOS was defined as perfluorooctane sulfonates $C_8F_{17}SO_2X$ (X=OH, metal salt, halide, amide or other derivatives including polymers).

1. Management options

11. The questionnaire had provided limited additional information, mainly on regulatory actions taken at national and regional level, as detailed below.

12. In 2006, Canada had proposed a national regulation to prohibit the production and use of PFOS and its salts and substances that contain one of the following groups $C_8F_{17}SO_2$, $C_8F_{17}SO_3$ or $C_8F_{17}SO_2N$, with derogations provided for certain uses, e.g. aqueous fire-fighting foam, metal plating, semiconductor manufacturing and photolithography, and use of products containing PFOS produced before the regulation entered into force.

13. The European Union (EU) had amended Council Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations to include PFOS. The directive provided derogations for uses in semiconductor manufacturing, photographic coatings, chromium plating, and hydraulic fluids for aviation. In 2007, Norway banned PFOS in fire-fighting foams, and the use in textiles and in surface protection agents. In April 2006, the United States Environmental Protection Agency had proposed a federal Significant New Use Rules (SNURs) for 183 additional perfluoroalkyl sulfonate substances. The

final SNUR was expected in 2007.

14. In addition, some new data had been provided on mainly national uses, which did not alter the management options as reported in document ECE/EB.AIR/WG.5/2006/10, paragraphs 91–101.

2. Options for possible inclusion into the Protocol

15. The Task Force identified the following options for possible inclusion of PFOS into the Protocol:

(a) PFOS could be listed in annex I to the Protocol, with exemptions for production for those critical uses identified in annex II;

(b) PFOS could be listed in annex II to the Protocol and the allowed uses specified together with their related conditions in the implementation requirements, i.e. to restrict the use to semiconductor manufacturing, photographic coatings, chromium plating, and hydraulic fluids for aviation.

16. Options could be related to specific conditions for a stepwise phase-out such as limited derogations for specific uses and a reassessment of the allowed uses in the light of technical progress and additional knowledge.

17. In addition to the above options, releases from products and/or articles containing PFOS when they become waste could be addressed by referring to waste handling and waste treatment in annexes V and VIII.

B. Commercial Pentabromodiphenyl ether (c-PentaBDE)

18. The composition of c-PentaBDE (commercial PentaBDE) has been defined in document ECE/EB.AIR/WG.5/2006/10, paragraph 59. The composition of older mixtures or mixtures from various countries may differ.

1. Production, use and emissions

19. The Task Force reaffirmed all use categories, sources and emissions, as described in document ECE/EB.AIR/WG.5/2006/10, paragraphs 61–69.

20. New information on production and use of c-PentaBDE included proposals by the United States on its end-use and by the Canada on phasing out its production and restricting its use (in 2006). The East European countries outside the EU submitted no information on the use and production of c-PentaBDE.

21. New information on waste treatment was reported. Under EU legislation, brominated flame retardants (BFR) would be separated from electrical and electronic (EE) appliances as part of the treatment process.

2. Management options

22. The alternatives identified in document ECE/EB.AIR/WG.5/2006/10, paragraphs 70–81, were reaffirmed and some new alternatives were identified for some uses. This meant that there were less hazardous alternatives and methods for all uses. However, exemptions might be needed for uses in military aircraft due to fire safety requirements. Costs for ending production and eliminating the uses of c-pentaBDE in the UNECE region should be very low.

23. Additional costs to the ones identified in ECE/EB.AIR/WG.5/2006/10, paragraphs 80–81, could arise from reduction measures applied at waste management facilities. It would be reasonable to implement best available techniques (BAT)/best environmental practices (BEP) at disposal and recycling/recovery installations. The Task Force estimated that within the UNECE region BAT/BEP were generally economically justifiable.

24. An additional cost of recycling could arise from the removal of components containing c-PentaBDE in order to be able to recycle/reuse the non-hazardous portion and to direct the c-pentaBDE containing portion to controlled disposal (e.g. treatment as hazardous waste).

25. Possible management options consisted of restricting or eliminating production and use of c-PentaBDE or its TetraBDE and PentaBDE congeners having POP characteristics. Listing the individual congeners could facilitate the monitoring and control of emissions, production and use. This would also be consistent with the existing national legislations. All mixtures containing tetraBDE and pentaBDE congeners would then be covered by the obligation of the Protocol, except when they occur as traces.

3. Options for possible inclusion into the Protocol

26. The Task Force identified the following options for possible inclusion of c-PentaBDE into the Protocol:

(a) Listing c-PentaBDE in annex I to the Protocol in order to prevent future production and use, with the exception of minor uses for military aircrafts, which would require exemptions;

(b) Listing c-PentaBDE in annexes I and II to the Protocol, but with restricted uses for specific uses in military aircraft and the use of imported articles with c-PentaBDE occurring in the UNECE region for a specified time.

27. Listing under the above options (a) and (b) could be done in two different ways:

(a) List TetraBDE and PentaBDE congeners individually in order to eliminate the production and use of commercial mixtures containing these congeners at concentrations ≥0.1% by weight.

(b) List c-PentaBDE in order to eliminate the production and use of c-PentaBDE.

28. Options could be related to specific conditions for a stepwise phase-out such as limited derogations for specific uses and a reassessment of the allowed uses in the light of technical progress and additional knowledge.

29. In addition to the above options, releases from products and/or articles containing c-PentaBDE when they become waste could be addressed by referring to provisions on waste handling and waste treatment in annexes V and VIII. Special attention should be given to reducing emissions by adding recycling and shredder plants to annex VIII, with guidance on BAT/BEP in annex V.

C. Commercial octabromodiphenyl ether (c-OctaBDE)

30. The Task Force specified that the term "c-OctaBDE" designated a commercial mixture containing polybrominated diphenyl ethers, typically consisting of penta- to deca-bromodiphenyl ether congeners. The specific composition of older mixtures or mixtures from various countries could be different. c-OctaBDE has been used as an additive flame retardant, mainly in plastics industry for polymers used for housings of office equipment.

1. Production, use and emissions

31. The estimated annual world-wide production of c-OctaBDE was 6,000 tons in 1994. Production was recently phased out in the EU, Norway, Switzerland, Canada and the United States. Currently, buying c-OctaBDE was reported to be hardly possible at the global level.

32. The use of c-OctaBDE had been phased out in the EU, Norway and Switzerland. The United States was expected to phase it out and Canada had proposed in 2006 to restrict its use. Globally, 70 per cent of c-OctaBDE had been used in acrylonitrilebutadiene-styrene (ABS). Other minor uses included high-impact polystyrene (HIPS), polybutylene terephthalate (PBT) and polyamide polymers.

33. Releases from production, handling and processing in the UNECE region have already ceased or are close to zero.

34. Releases from use, disposal and recycling of products are due to volatile and particulate losses. The EU estimated that the volatile loss over a ten year lifetime of a product was 0.54 per cent of its c-OctaBDE content. The corresponding estimate for particulate loss ("waste remaining in the environment") was 2 per cent, mainly arising from disposal and recycling/reclamation

activities. These releases entered industrial/urban soil (approximately 75%), air (approximately 0.1%) and surface water (approximately 24.9%). For the EU Member States, estimates for volatile and particulate losses amounted to 7.29 and 26.9 tons for 1999. Corresponding estimates for Canada were 0.6 and 2.8 tons for 2000.

35. Taking account of the ban and phase out of c-OctaBDE, releases during the service life of products and in particular at their disposal, represented the most significant share of the total releases in the UNECE region. Releases after disposal were considered negligible.

36. The environmental degradation rate by debromination of c-OctaBDE had not been determined and the environmental significance of any degradation pathways remained uncertain.

2. Management options

37. The phase-out of c-OctaBDE was already advanced: its production had stopped in the EU, the United States and Canada. In light of the ban and phase out of c-OctaBDE in 2004 in the EU, the availability of practicable and economically viable substitutes for all uses had already been demonstrated in practice.

38. The alternative flame retardants for c-OctaBDE had been identified. The human health or environmental impacts of these alternatives made them preferable alternatives over c-OctaBDE. However, some alternatives currently in use caused concern because of their properties. Reactive type flame retardants and halogen free substitutes appeared to be generally preferable under environmental and health aspects.

39. Incremental costs as a result of a complete ban were not expected for the industry in the UNECE region.

40. A ban of c-OctaBDE would ultimately eliminate emissions from the production, manufacturing and use in new products. It would neither affect the emissions from products already in use nor directly influence emissions from disposal or recovery. Application of BAT/BEP at disposal and recycling/dismantling/reuse could be an efficient and economically reasonable way to minimize related emissions. Related costs were considered economically justifiable.

41. Costs implications for consumers were not expected. Financial costs for Governments would depend on the management actions taken. There might be costs associated with mandated control measures e.g. monitoring and enforcement of waste management facilities. There might also be costs associated with monitoring and controlling articles containing c-OctaBDE, especially imported.

42. Possible management options were to restrict or eliminate production and use of c-OctaBDE or its PentaBDE and HexaBDE congeners having POP characteristics. Listing the

individual congeners could facilitate the monitoring and control of emissions, production and use. This would also be consistent with existing national legislations. All mixtures containing PentaBDE and HexaBDE congeners would then be covered by the obligations of the Protocol, except when they occur as traces.

3. Options for possible inclusion into the Protocol

43. The Task Force identified options for possible inclusion of c-OctaBDE into the Protocol. Listing c-OctaBDE in annex I to the Protocol in order to prevent future production and use could be done in two different ways:

(a) Listing PentaBDE and HexaBDE congeners individually in order to eliminate the production and use of commercial mixtures containing these congeners at concentrations ≥0.1% by weight;

(b) Listing c-OctaBDE in order to eliminate the production and use of c-OctaBDE.

44. In addition to the above, releases from products and/or articles containing c-OctaBDE when they become waste could be addressed by referring to waste handling and waste treatment in annexes V and VIII. Special attention should be given to reduce emissions by adding recycling and shredder plants to annex VIII, with guidance on BAT/BEP in annex V.

D. Polychlorinated naphthalenes (PCN)

45. PCNs were defined as organic chemical compounds based on the naphthalene ring system, where one or more hydrogen atoms have been replaced by chlorine. The generic molecular formula is $C_{10}H_{8-n}Cl_n$, where n = 1 to 8. There are 75 different congeners of PCN with different physical and chemical properties. The congeners and their mixtures have different Chemical Abstracts Service (CAS) registry numbers.

1. Production, use and emissions

46. PCNs were commercially produced as mixtures of several congeners with different product names. Until the 1970s, PCNs were high-volume chemicals. The total global production of PCNs was estimated at 150,000 metric tons up to that period. Their production ceased in the UNECE region in the 1980s.

47. Most important uses of PCN had been in wood preservation, as an additive to paints and engine oils, and for cable insulation and in capacitors. Besides these uses, PCNs were also present in technical PCB formulations and could be formed in thermal processes, of which waste incineration was the most important.

48. Current emissions of PCN were caused by unintentional releases from combustion

processes to produce heat and power, from industrial processes, solvent use and waste incineration. Total emissions in the UNECE region were estimated at 1.03 tons per year.

2. Management options

49. Commercial production of PCNs in the UNECE region had ceased. The commercial use of PCNs had been substituted by the use of other chemicals. The use of polychlorinated bihphenyls (PCBs) and waste incineration were assumed to be the most important remaining sources of unintentional emissions of PCNs.

50. The emissions of PCNs from these sources were reduced by the same measures that reduce the emission of PCBs resulting from their use and by measures to reduce emissions of PCBs and dioxins from incineration.

51. Annex V to the Protocol provides the Parties with guidance in identifying BAT to control emissions of POPs from major stationary sources, including waste incinerators. As these installations have to reduce the emissions of dioxins and furans (PCDD/F) by using BAT mentioned in annex V, this will also lead to a reduction of the emissions of PCNs from waste incineration.

52. No additional costs were identified for eliminating the production and use of PCN, since industry has substituted this use already.

53. Costs of controlling unintentional emissions. PCNs were emitted as part of unintentional releases from the same sources as the POP compounds PCDD/F. As measures had already been implemented to reduce the emissions of PCDD/F, no extra costs were expected for industry for reducing unintentional emissions of PCNs .

54. Costs for consumers. Price increases were not expected since the substitutes were already in use and measures against unintentional emissions had to be taken to reduce other emissions.

55. Control costs for State budgets would be very low and could consist of extra costs for measuring of PCN content in products or from unintentional emissions, and for making emission inventories. These costs could be regarded as negligible.

3. Options for possible inclusion into the Protocol

56. The Task Force identified the following options for possible inclusion of PCN into the Protocol:

(a) Listing of PCN in annex I to the Protocol in order to prevent production and use.

(b) Listing of PCN in annex I and annex III to the Protocol.

E. Pentachlorobenzene (PeCB)

57. PeCB was defined as a cyclic aromatic hydrocarbon with five chlorine atoms belonging to the group of chlorobenzenes. PeCB was used in the production of the pesticide quintozene (pentachloronitrobenzene) as feedstock or intermediate. In the past, PeCB had been used in combination with PCBs in heat transfer equipment and in electrical equipment. Nowadays, PeCB entered the environment mainly due to historic use and unintentional releases, such as by-product formation in thermal processes.

1. Production, use and emissions

58. Commercial production of PeCB in the UNECE region had stopped many years ago. The situation outside the UNECE region was unknown. Formerly, PeCB was used for producing quintozene and might still be present as an impurity in quintozene stockpiles. In the EU, the use of quintozene was eliminated in 2002. Worldwide, quintozene is still used, although it was unclear if it was manufactured using PeCB.

59. PeCB was used in PCB containing equipment. In the 1980s, production of PCBs stopped and the use of PCBs in equipment declined considerably in the UNECE region. Trace amounts of PeCB might be released into the environment when there were spills of dielectric fluids from PCB-containing equipment. When most of the existing PCB equipment is taken out of service, the PeCB amounts released from spills would tend towards zero.

60. Unintentional releases of PeCB were mainly due to by-product formation during incineration and combustion processes, thermal metallurgic processes, and the production of chlorinated chemicals. Waste incineration was potentially the most significant source of PeCB.

61. PeCB might be produced whenever organic compounds are burned in the presence of a chloride source. In low temperature solid waste incineration and combustion processes, such as barrel burning, the emission of far larger amounts of chlorobenzenes occured in comparison with high temperature controlled incineration.

62. Unintentional releases of PeCB might come from the use of pentachlorophenol for wood treatment as it contained PeCB as an impurity. Within most EU countries the use of pentachlorophenol already had stopped. In North America, pentachlorophenol was still used. Reported emissions in Canada represented approximately 6 per cent of the total annual release of PeCB in Canada.

63. For the year 2000, the emission of PeCB in the UNECE region was calculated to be zero, based on data from individual countries and expert estimates. Reported emissions in Canada in 2001 were about 40 kg, of which barrel burning of household waste represents the largest source. Toxic Release Inventory (TRI) data of the United States showed a total amount of 0.7 tons PeCB released in 2005 in the United States.

2. Management options

64. In the UNECE region, commercial production and use had stopped and PeCB was no longer used. Impacts of a ban on the commercial production and use were expected to be negligible.

65. The use of quintozene had already stopped in most UNECE countries. An alternative production process for quintozene was generally available and applied. Therefore, current PeCB releases from this source were very low. When commercial use of PeCB was banned, PeCB emissions related to quintozene would phase out with time.

66. Releases from PCB equipment. PCB was one of the substances scheduled for elimination under the Protocol. Actions taken to eliminate the use of PCBs would subsequently eliminate any related PeCB emissions. No additional management actions were required.

67. By-product formation in thermal processes. Measures given in annex V to control the emissions of PCDD/F would also lead to a reduction of the emissions of PeCB. No additional management actions were required. Emission reduction by addressing residential/domestic combustion sources, such as barrel burning, was difficult to control. Providing a residential waste management infrastructure could be an alternative to open burning of garbage in rural areas. No information on costs and impacts was available.

68. In order to reduce PeCB emissions a possible ban of the use of pentachlorophenol for wood treatment might not balance the environmental gains. Management actions were preferably aimed at reducing PeCB impurities in pentachlorophenol. These actions only concerned North America.

69. No additional costs for eleiminating the production and use of PeCB were expected, since industry had substituted this use already. The same applied to costs of controlling unintentional emissions: PeCB was emitted as unintentional release from the same sources as the POP compounds dioxins and furans. As measures were already implemented to reduce the emissions of PCDD/F no extra costs were expected to occur for industry to reduce emissions of PeCB. Regarding costs for consumers, no price increases were expected. However, costs might be involved when barrel burning or residential combustion was restricted. For the UNECE region, costs for State budgets were expected to be negligible. When management actions or strategies were required, such as measures on barrel burning or residential combustion, they would involve costs.

3. Options for possible inclusion into the Protocol

70. The Task Force identified the following options for possible inclusion of PeCB into the Protocol:

(a) Listing of PeCB in annex I to the Protocol in order to prevent production and use;

(b) Listing of PeCB in annex I and annex III to the Protocol.

F. Hexachlorobutadiene (HCBD)

71. HCBD was defined as a halogenated aliphatic compound (chemical formula C_4C_{l6}). HCBD has been used as a solvent for rubber and other polymers, in heat transfer fluids, as a transformer liquid, a hydraulic fluid, a washing liquor for removing hydrocarbons from gas streams and as a fumigant for treating grapes. Nowadays, HCBD was mainly formed as a by-product during the manufacture of chlorinated hydrocarbons such as tri- and tetrachloroethene and tetrachloromethane. There might also be substantial amounts of HCBD as a by-product from non-chemical facilities producing magnesium.

1. Production, use and emissions

72. The world annual production of HCBD was estimated to be 10,000 tons in 1982. Currently there was no commercial production of HCBD in Europe, the United States and Canada. The Russian Federation was reported to be a major user of HCBD as a fumigant for treating grapes, but it is unclear whether HCBD was still used for this purpose.

73. The calculated emission of HCBD in the UNECE (European) region for the year 2000, based on data from individual countries and expert estimates, was 2.59 tons/year. Emissions from historic use were expected to be significantly greater that current emissions. The commercial production and use of HCBD had been virtually eliminated in Europe, and in the United States and Canada, emissions from production and use were expected to be very low. Unintentional emissions of HCBD resulting from production of chlorinated hydrocarbons and magnesium were decreasing. Emissions to water and air from chlor-alkaline production plants in Europe and the United States showed a decrease of more than 99 per cent and 93 per cent respectively during the period from 1985 to 2002.

2. Management options

74. Although information on substitutes for commercial use of HCBD was not readily available, the strongly decreased use indicated that substitution had taken place. Since the use of HCBD had stopped in most countries, additional costs of a ban on the commercial production and use of HCBD in the UNECE region should be negligible. An elimination of HCBD production and use in the UNECE region did not interfere with commercial trading since the regulation would reduce demand as well as production. The available information gave no indications that HCBD-containing products were still imported into the UNECE region.

75. Production of chlorinated hydrocarbons. Emissions of HCBD due to by-product formation could be minimized either by alternative production processes or by emission control

measures. In case significant amounts of HCBD were being formed, there should be strict controls so that emissions are minimized. Emission controls should be based on applying BAT.

76. Emissions of HCBD from production of magnesium could potentially be controlled by using measures based on use of BAT, consisting of scrubbing and incineration of waste gases. Further reduction of chlorinated hydrocarbon emissions could be achieved by injection of activated carbon, which was also reducing emissions of dioxins and other chlorinated hydrocarbons, and was considered to be BAT in Europe.

77. There were no additional costs for eliminating the production and use of HCBD, since industry had substituted this use already. For the production of chlorinated hydrocarbons, incineration at high temperatures and stripping had proved to be cost-effective measures to reduce emissions. The HCBD emissions in the United States and Europe, due to these processes, had significantly decreased. In many cases, current control measures and application of BAT/BEP to address other by-products were likely to also reduce by-product emissions of HCBD. There would be no extra costs involved for industry if BAT/BEP measures were implemented. If measures were taken to reduce PCDD/F, there would be no extra costs involved for industry for reduction of HCBD emissions from production of magnesium.

78. No price increases (costs for consumers) were expected. Control costs for State budgets were expected to be very low, possibly consisting of extra costs for measuring of HCBD content in products or from unintentional emissions and for making emission inventories.

3. Options for possible inclusion into the Protocol

79. The Task Force identified the following options for possible inclusion of HCBD into the Protocol:

(a) Listing of HCBD in annex I to the Protocol in order to prevent production and use;

(b) Listing of HCBD in annex I and annex III to the Protocol.

80. Unintentional releases of HCBD from production of magnesium and chlorinated hydrocarbons could be addressed by adding these source categories to annex VIII, with guidance on BAT/BEP in annex V.

G. Short-chain chlorinated paraffins (SCCP)

81. SCCPs were defined as intentionally produced n-paraffins with a carbon chain length of 10 to 13 carbon atoms and a degree of chlorination of more than 48 per cent by weight. These synthetic compounds were viscous, colourless or yellowish, dense oils. They were practically insoluble in water. The molecular formula was $C_xH_{(2x-y+2)}Cl_y$ where x = 10-13 and y = 1-13. The molecular weight ranged from 320 to 500.

82. SCCPs were usually mixtures of different carbon chain lengths and different degrees of chlorination although all have a common structure in that no secondary carbon atom carried more than one chlorine. Owing to the many possible positions for the chlorine atoms, standard analytical methods did not permit their separation and identification.

83. SCCPs were mainly used in metal working fluids, sealants, as flame retardants in rubbers and textiles, in leather processing and in paints and coatings.

1. Production, use and emissions

84. The total production had been significantly reduced during the past decade in several UNECE countries. The total production in the UNECE region was estimated to range from 7,500 to 11,300 tons/year. The volume of SCCPs produced in Brazil, the Russian Federation and Taiwan Province of China was unknown. However, the significant volumes used in Eastern European UNECE countries indicated that there might be additional production.

85. Current uses of SCCPs within the UNECE region covered metalworking fluids, plasticizers in paints, coatings and sealants, flame retardants in rubbers and textiles. Use in metal working and leather processing had been recently phased out in the EU, Norway and Switzerland. In addition, in Norway and Switzerland and 11 EU Member States all other major uses had been phased out. Estimated amounts used in the EU in 2005 ranged from 625 to 875 tons/year. Exact amounts used outside the EU were not known. Production estimates for North America ranged from 6,000 to 8,800 tons/year. Use estimates for metalworking in Eastern European UNECE member countries amounted to 68,000 tons/year.

86. Releases of SCCPs in the UNECE region arose from production, use, handling and transport, use of products containing SCCPs and disposal of waste containing SCCPs. It could be assumed that the most relevant sources for releases were the different use sectors, production and the life-time releases from products containing SCCPs including disposal. Comprehensive data on current emissions were not available for non-EU countries.

87. Emissions from production occurred mainly to water. Prior to the implementation of the EU marketing and use restrictions, emissions of SCCPs from production in the EU were estimated to amount to 45 tons/year using a release factor of 0.01 per cent. Specific release estimates from non-EU countries were not available. In Europe and the United States, production was a minor emission source.

88. Release from the use of SCCPs were most relevant to formulation and in particular for their use as a metalworking fluid and a leather processing agent; as a flame retardant in rubber, textiles and plastics; and as a plasticizer in sealant, adhesives, paints and coatings. According to different use patterns, the release patterns varied in the different parts of the UNECE region. Data from the EU indicated releases from use of metal working fluids in the order of 1,700 tons/year prior to the legal ban on use for this sector.

89. Releases from products containing SCCPs throughout their lifetime and at disposal and recovery/reclamation were considered to be major sources of environmental contamination. Relevant were volatile, leaching and particulate losses. For the EU, it had been estimated that in 2001 over the product lifetime around 39 to 107 tons/year were leaching to wastewater and approximately 3 to 10 tons/year were volatilizing into air. Particulate losses over lifetime and disposal were estimated at around 29 to 58 tons/year to urban/industrial soil, 10 to 19 tons/year to surface water and 0.039 to 0.08 tons/year to the air. Specific release estimates from outside the EU were not available. Releases from landfilling and incineration were considered irrelevant.

2. Management options

90. SCCPs had been phased out in metalworking and leather processing in Norway, and Switzerland, and in the EU in 2004 as a result of the EU risk assessment. This indicated the availability of appropriate alternatives for SCCP. All other major uses were phased out in countries, which accepted the PARCOM decision 95/1[2] that was based on a precautionary approach. This indicated the availability of alternatives for all other uses as a plasticizer and as a flame retardant in paints and coatings, sealants, textiles, plastic and rubber. In some cases, particularly for uses as flame retardants, the alternatives might not completely fulfil technical requirements, such as for mining conveyor belts or for dam sealants.

91. Available substitutes were generally considered less harmful than SCCPs. However, this did not imply they were completely safe and not related to risks. Environmental and health risks needed to be considered according to specific uses and substitutes. Based on current knowledge and available information, reactive type flame retardants and halogen-free substitutes appeared to be generally preferable under environmental and health aspects. Medium-chain chlorinated paraffins (MCCPs) and long-chain chlorinated paraffins (LCCPs) were suggested as possible alternatives to SCCPs. Some of these substances might also show persistent, bioaccumulative and toxic properties. However, currently there was no conclusive evidence that MCCPs and LCCPs were POPs, as defined by the Protocol.

92. A ban would ultimately eliminate emissions from the production, manufacturing and use of SCCPs in new products. It would neither affect the emissions from products already in use nor directly influence emissions from disposal or recovery. Corresponding releases could be reduced by supporting implementation of BAT/BEP at disposal and recycling/recovery installations. Such measures were already implemented in many countries where related costs were considered economically justifiable. If SCCPs were banned, producers would have to face decreases in sales that could be of the order of €10-20 million. The accuracy of the estimation was uncertain. On the other hand, these losses could be expected to be outweighed by corresponding gains of

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[2] Decision under the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention).

producers of alternative appropriate substitutes.

93. No relevant cost implications for leather processing were expected. Cost implications for metal working were not expected in those countries who have already phased it out. Substitution costs for metalworking fluids depended on the type of substitute ranging from €100 per ton for MCCPs to €2,500 per ton for non-chlorinated substitutes. Expected additional annual costs ranged from €7 to €169 million per year in the non-EU European countries and from €0.4 to €10 million in the United States. Based on existing experiences, cost increases might be significantly lower.

94. Regarding non-emissive applications, such as use as plasticizers in paints, coatings and sealants as flame retardants in rubber, textiles and plastics SCCPs had been phased out in a number of European countries. Costs for substitution in these sectors were estimated as approximately €1,000 per ton. Expected additional costs were around €0.9 million for the EU. Of this, €0.37 million could be allocated to the use in paints, coatings and sealants, €0.12 million to the use in rubber and as flame retardants and €0.41 million to other non-emissive uses. Expected additional costs were around €4 million for the United States. These could be allocated to different uses as follows: plastics €1.6 million, rubber €0.96 million, paints €0.72 million, adhesives €0.48 million, and miscellaneous €0.24 million.

95. In the specific non-emissive applications of conveyor belts in underground mining and dam sealants, concerns had been expressed concerning suitable substitution possibilities due to economic and safety factors. However, it could be expected that existing experiences would lower potential cost implications and that price increases would not influence investment decisions in underground mining or in dam construction.

96. Emission reduction measures could be considered during production and use of SCCPs. There were a number of measures that could be taken to reduce such releases. Possible measures were, for example, collection of dust and treatment as controlled waste, implementation of totally closed processes, and the installation of abatement technology.

97. Application of BAT/BEP at disposal and recycling or dismantling or reuse could be an efficient and economically reasonable way to minimize related releases. Possible measures could include the following:

(a) Considering generic techniques applied to waste storage (e.g. controlled run-off from storage places, using polymer sheeting to cover open solids storage facilities that may generate particulates);

(b) Considering techniques to reduce water use and prevent water contamination (e.g. by vacuuming and dust collection in preference to hosing down);

(c) Minimizing dust input to wastewater and dust collection and disposal as controlled waste (incineration or landfill);

(d) Applying an appropriate wastewater treatment,

(e) Using local exhaust ventilation to control dust and volatile emissions;

(f) Shredding in closed systems, including dust separation and thermal treatment of exhaust air.

98. Increasing costs for substituting SCCPs in non-emissive applications could possibly be passed on to the consumer. This was only relevant for those countries and uses where prohibitions were not already in place. In metalworking, additional costs would be partly absorbed by producers and depend on substitutes chosen. Moderate increases in costs might be expected for adhesives and sealants. Cost increases were also expected in the case of solvent-based acrylic paints and specific rubber products (e.g. mine conveyor belts). It was not expected that cost increases would influence consumer or investment decisions.

99. No specific information on additional costs for State budgets could be identified. However, it could be expected that additional budgets for enforcement and compliance would be required, depending on the current status or planning on the phase out of specific uses of SCCPs in each country. Additional costs for a ban of SCCPs for a 25-year period for a country like Canada were estimated to amount to several €100,000.

3. Options for possible inclusion into the Protocol

100. The Task Force identified the following options for possible inclusion of SCCP into the Protocol:

(a) Listing SCCPs in annex I to the Protocol in order to eliminate its production and use;
(b) Listing SCCPs in annex II to the Protocol and specifying allowed uses and related conditions in the implementation requirements.

101. Option (b) could be defined in two different ways:

(a) Restrict the use of SCCPs to dam sealants and to conveyor belts for underground mining;

(b) Restrict the use of SCCPs to non-emissive applications, i.e. as a plasticizer in paints, coatings and sealants and as a flame retardant in rubber, textiles and plastics. In effect, this means a ban in metalworking and leather processing.

102. Options could be related to specific conditions for a stepwise phase-out such as limited

derogations for specific uses and a reassessment of the allowed uses in the light of technical progress and additional knowledge.

103. In addition to these options, releases from products and/or articles containing SCCPs when they become waste could be addressed by referring to waste handling and waste treatment in annexes V and VIII.

III. UPDATE OF THE GENERIC GUIDELINES FOR THE TECHNICAL REVIEW OF DOSSIERS OF NEW SUBSTANCES

104. The generic guidelines for the technical review of dossiers of new substances that might be proposed by parties for inclusion into annexes I, II and III to the Protocol were intended to provide a simple framework to achieve uniformity and consistency in expeditious reviews, and to reduce the level of uncertainty for all involved (i.e. the Party making the proposal, the Task Force and its reviewers, the Working Group on Strategies and Review, the Parties to the Protocol and the Executive Body).

105. The Task Force discussed a revised version of the generic guidelines on the basis of a draft prepared by the Co-Chair, Ms. C. Heathwood. Following discussions, the guidelines were finalized based on the feedback from the Task Force. The revised guidelines would be made available on the Task Force’s website together with the letter that was sent to reviewers of the technical dossiers (20 February 2006). The Task Force agreed that the guidelines could be further adapted in the future, as needed. In the case of new substances being submitted in 2007, a letter to the reviewers would again be drafted and circulated in advance to the Task Force.

IV. OTHER ITEMS

106. The Task Force took note of the results of the regional modelling and measurement of POPs presented by Mr. A. Sweetman from the Environment Centre of the Lancaster University. It also noted the results of a study by the Dutch research organization TNO on the effectiveness of the Protocol and the costs of a possible revision to the Protocol, presented by Mr. M. Van Het Bolscher (the Netherlands). The presentations and the TNO report are available on the website of the Task Force (http://www.unece.org/env/popsxg/6thmeeting.htm).

107. The Chair of the Task Force noted that he had been involved in evaluating and revising the questionnaire on Strategies and Policies for air pollution abatement, and had consulted the Task Force about questions relevant to the Protocol on POPs. In addition, he brought forward issues related to POPs in the generic guidelines for estimating and reporting emission data under the Convention. These issues referred to data from direct emissions as well as emissions resulting from products and/or articles containing POPs during their lifetimes and when they become waste, as well as from the production, use and sales of POPs. The Task Force provided some guidance on the matter.

V. 2008 WORKPLAN

108. The Task Force proposed items for its workplan 2008, as follows:

(a) Initiate Track A and Track B reviews of dossiers as requested by the Executive Body;

(b) Upon request, assist the Executive Body and the Working Group on Strategies and Review in the revision of the Protocol;

(c) Hold its sixth meeting in 2008, as needed (date and venue to be decided).
